PRIMARY 3
MATHEMATICS

TERM 1

2020-2021

FOREWORD

This is a pivotal time in the history of the Ministry of Education and Technical Education (MOETE) in Egypt. We are embarking on the transformation of Egypt's K-12 education system starting in September 2018 with KG1, KG2 and Primary 1 continuing to be rolled out year after year until 2030. We are transforming the way in which students learn to prepare Egypt's youth to succeed in a future world that we cannot entirely imagine.

MOETE is very proud to present this new series of textbooks, Discover, with the accompanying digital learning materials that captures its vision of the transformation journey. This is the result of much consultation, much thought and a lot of work. We have drawn on the best expertise and experience from national and international organizations and education professionals to support us in translating our vision into an innovative national curriculum framework and exciting and inspiring print and digital learning materials.

The MOETE extends its deep appreciation to its own "Center for Curriculum and Instructional Materials Development" (CCIMD) and specifically, the CCIMD Director and her amazing team. MOETE is also very grateful to the minister's senior advisors and to our partners including "Discovery Education," "Nahdet Masr," "Longman Egypt," UNICEF, UNESCO, and WB, who, collectively, supported the development of Egypt's national curriculum framework. I also thank the Egyptian Faculty of Education professors who participated in reviewing the national curriculum framework. Finally, I thank each and every MOETE administrator in all MOETE sectors as well as the MOETE subject counselors who participated in the process.

This transformation of Egypt's education system would not have been possible without the significant support of Egypt's current president, His Excellency President Abdel Fattah el-Sisi. Overhauling the education system is part of the president's vision of 'rebuilding the Egyptian citizen' and it is closely coordinated with the ministries of higher education & scientific research, Culture, and Youth & Sports. Education 2.0 is only a part in a bigger national effort to propel Egypt to the ranks of developed countries and to ensure a great future to all of its citizens.

WORDS FROM THE MINISTER OF EDUCATION & TECHNICAL EDUCATION

It is my great pleasure to celebrate this extraordinary moment in the history of Egypt where we launch a new education system designed to prepare a new Egyptian citizen proud of his Egyptian, Arab and African roots - a new citizen who is innovative, a critical thinker, able to understand and accept differences, competent in knowledge and life skills, able to learn for life and able to compete globally.

Egypt chose to invest in its new generations through building a transformative and modern education system consistent with international quality benchmarks. The new education system is designed to help our children and grandchildren enjoy a better future and to propel Egypt to the ranks of advanced countries in the near future.

The fulfillment of the Egyptian dream of transformation is indeed a joint responsibility among all of us; governmental institutions, parents, civil society, private sector and media. Here, I would like to acknowledge the critical role of our beloved teachers who are the role models for our children and who are the cornerstone of the intended transformation.

I ask everyone of us to join hands towards this noble goal of transforming Egypt through education in order to restore Egyptian excellence, leadership and great civilization.

My warmest regards to our children who will begin this journey and my deepest respect and gratitude to our great teachers.

Dr. Tarek Galal Shawki
Minister of Education & Technical Education

NAME: --

CONTENTS

LESSON 1: CONNECT

Pattern Problem 1



Pattern Problem 2

30, 40, 50, 60, 70, ______ , ______ , ______ , ______ , ______

LESSON 1: APPLY

Directions: Look at each dot image. Build each image using counters. What is the pattern? Figure out the next two images in the pattern. Build them and then draw them in the boxes.

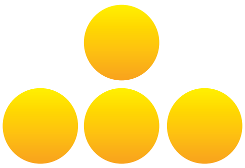


Image One

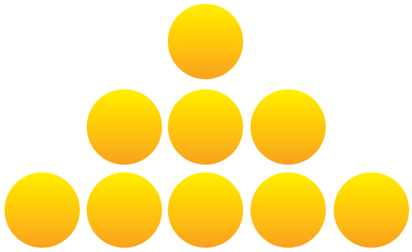


Image Two

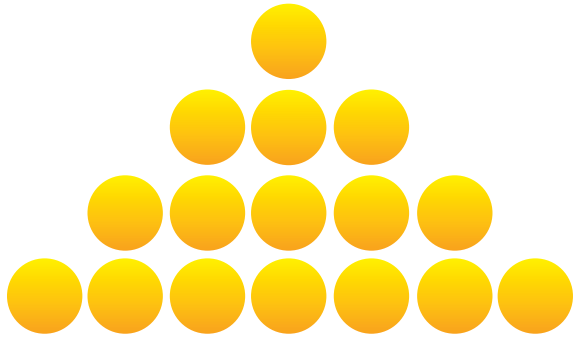


Image Three

Image FOUR

Image FIVE

CHALLENGE: Record the number of counters in each image. How could you predict how many counters would be in the 10th image?

LESSON 2: APPLY

Directions: Make a bar graph using the sibling data. Be sure to include a title, labels for each axis, and colored bars.

CHALLENGE: If we invited all of the siblings to visit, how many people would come?

LESSON 2: MATH JOURNAL

Directions: Reflect on your learning. Write two questions that could be answered by looking at the data in your Sibling Bar Graph.

1. ____

____

____

2. ____

____

____

FAVORITE DESSERTS	
Basbousa	𝍷𝍷𝍷𝍷
Kunafa	𝍸 𝍷𝍷𝍷𝍷
Sweet Potatoes	𝍷𝍷𝍷
Sweet Feteer	𝍸 𝍸 𝍷𝍷
Rice Pudding	𝍸
Om Ali	𝍸 𝍸

LESSON 4: APPLY

Directions: Create a line plot using the beans in bag data. Be sure to give your line plot a title and a key.



KEY

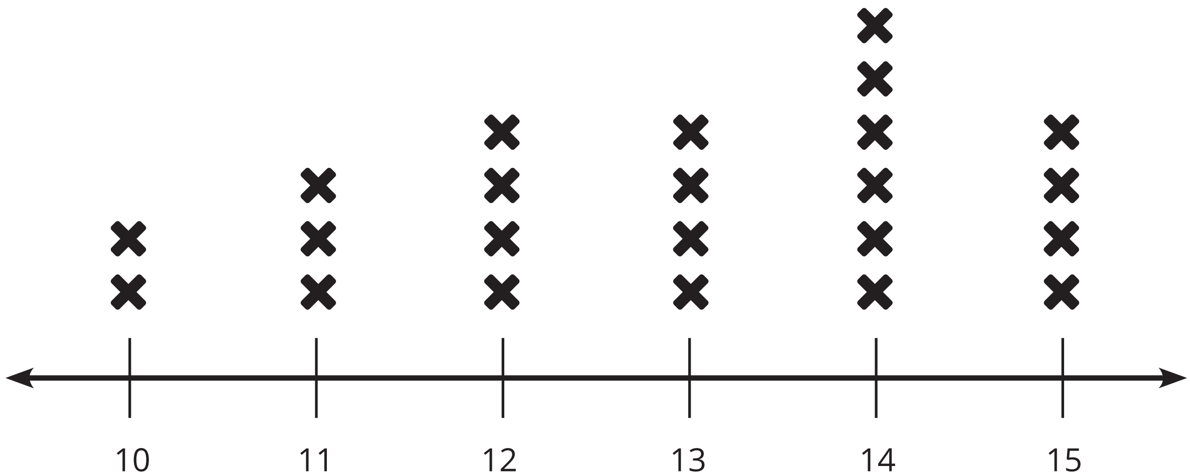
CHALLENGE: If we dumped all the bags that had the most beans onto the floor, how many beans would we have on the floor?

LESSON 4: MATH JOURNAL

Directions: Reflect on your learning. In the box below, write about bar graphs, pictographs, and line plots.

- How are these types of graphs the same?
- How are these types of graphs different?
- Which do you prefer? Why?

Length of a Primary 3 Student's Hand from Wrist to Middle Finger



Length of hand in centimeters

X = 1 student

LESSON 5: APPLY

Directions: Measure the pieces of string and record their lengths in centimeters.

String Number	Length in cm
1	
2	
3	
4	
5	

Order the lengths (in centimeters) from shortest to longest:

________ ________ ________ ________ ________

LESSON 5: MATH JOURNAL

Directions: Reflect on your learning. In the box below, answer the following question.

- Where do you use measurement in the world outside of math class?

LESSON 6: APPLY

Directions: Look at the images below. Decide if the objects they depict should be measured in centimeters or meters and then write the word in the table.

IMAGES	METERS OR CENTIMETERS?
	
	
	
	
	
	

CHALLENGE: Name at least three other objects that could be measured in centimeters and at least three other objects that could be measured in meters.

Could be measured in cm	Could be measured in m

LESSON 6: MATH JOURNAL

Directions. Reflect on your learning. Then write or draw your answers to the following questions in the box below:

- When might it be okay to estimate a length?
- When would you need an exact measurement?

LESSON 7: APPLY

Directions: Use the table below to record your data. Remember to record the unit of measurement.

Name of Object	Length in cm

LESSON 7: MATH JOURNAL

Directions: Reflect on your learning. Write a response to the prompt in the box below.

Look at the line plot and think about the data shown on it.

Write a statement you can make about the data.

LESSON 8: APPLY

Directions: Measure the pieces of string and record their lengths in millimeters.

String Number	Length in mm
1	
2	
3	
4	
5	

LESSON 9: APPLY

Directions: Use the table below to record your data. Remember to record the unit of measurement.

Name of Object	Length in cm or mm

CHALLENGE: Pick three of your objects. If you laid them down one after the other, what would be the total length? Would it be more than or less than a meter?

LESSON 10: APPLY

Directions: Below is a checklist for you to use while you make your line plot. Make sure your line plot has all of the elements listed.

Checklist for Line Plot Assessment

- ☐ I gave my line plot a title.
- ☐ I labeled the number line.
- ☐ I wrote the units of measurement.
- ☐ My work is neat and organized.

Directions: Use the line below to create your line plot.

LESSON 11: APPLY

Directions: Flip over a card and write the digit in a place value box. You may use the Discard box once. Once you write a digit in place, you may not move it. After you have filled all five boxes, compare your numbers with your friends.

Goal: Make the greatest number in your group.

Practice Round:

Thousands	,	Hundreds	Tens	Ones		Discard
	,					

Round 1:

Thousands	,	Hundreds	Tens	Ones		Discard
	,					

Round 2:

Thousands	,	Hundreds	Tens	Ones		Discard
	,					

Round 3:

Thousands	,	Hundreds	Tens	Ones		Discard
	,					

Round 4:

Thousands	,	Hundreds	Tens	Ones		Discard
	,					

LESSON 11: MATH JOURNAL

Directions: Reflect on your learning. Think about a strategy you used to create the greatest number in the Place Value Game. Explain your strategy in the box below.

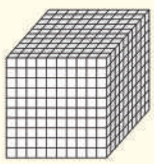
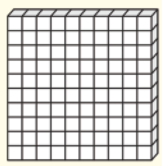
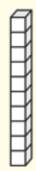
LESSON 12: APPLY

Directions: Follow the directions in each step below.

Step 1: Choose a number in the thousands and write it below.

________ , ________ ________ ________

Step 2: Draw a model of the number in the place value mat below.

Thousands	Hundreds	Tens	Ones
			

Step 3: Write your number in expanded form. Remember to use the addition and equal signs:

____

Step 4: Compare your number to three other students' numbers using the greater than (>) or less than (<) sign.

YOUR NUMBER	> OR <	OTHER STUDENT'S NUMBER

CHALLENGE: Fill in the blanks with either > or < .

1. 8,903 ______ 9,038   2. 7,878 ______ 7,787   3. 1,342 ______ 1,302

4. 2,345 ______ 2,344   5. 6,534 ______ 6,544

Order the numbers above from least to greatest.

________ ; ________ ; ________ ; ________ ; ________ ; ________ ;

________ ; ________ ; ________ ; ________

LESSON 13: APPLY

Directions: Flip over a card and write the digit in a place value box. You may use the Discard box once. Once you write a digit in place, you may not move it. After you have filled all six boxes, compare your numbers with your friends.

Goal: Make the smallest number in your group.

Round 1:

Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones		Discard
			,					

Round 2:

Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones		Discard
			,					

Round 3:

Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones		Discard
			,					

Round 4:

Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones		Discard
			,					

LESSON 13: MATH JOURNAL

Directions: Reflect on your learning. What strategies do you use to compare really big numbers? Write about them below.

LESSON 14: APPLY

Directions: Write each number in expanded form. Then practice reading each number in standard and expanded form (whisper).

62,319 = ______________________________

762,319 = ______________________________

15,780 = ______________________________

812,004 = ______________________________

Write your own really big numbers in standard form and then write them in expanded form.

__________ = ______________________________

__________ = ______________________________

Now order all the numbers you have above. Decide whether you want to order them from least to greatest or greatest to least.

__________ ; __________ ; __________ ; __________ ; __________ ; __________

LESSON 15: APPLY

Directions: Circle all the GROUPS of items you see below in the grocery store picture.



Directions: With a partner, determine the total number of items in each group. Record the name of the group and then show how you found the total. See example.

NAME OF GROUP	Write the TOTAL NUMBER OF ITEMS in the group. Show your thinking in WORDS, PICTURES, or NUMBERS.
Example: APPLES	3 + 3 + 3 + 3 = 12 apples 3, 6, 9, 12 12 apples

CHALLENGE:

1. Choose three of the groups and find the total number of objects all together.
2. Pick five of the groups and order the totals from the groups from smallest to largest.

________ ; ________ ; ________ ; ________ ; ________

LESSON 16: APPLY

Directions: Look at each star array and record the number of ROWS and the number of stars in each ROW. Then find the total number of stars. Use the work space on the next page to show how you found the total.

1.



Number of rows: ________

Number of stars in each row: ________

Total number of stars: ________

2.



Number of rows: ________

Number of stars in each row: ________

Total number of stars: ________

3.



Number of rows: ________

Number of stars in each row: ________

Total number of stars: ________

4.



Number of rows: ________

Number of stars in each row: ________

Total number of stars: ________

WORK SPACE	
1.	2.
3.	4.

LESSON 16: APPLY, continued

Directions: Look at each star array and record the number of COLUMNS and the number of stars in each COLUMN. Then find the total number of stars. Use the work space on the next page to show how you found the total.

5. 

Number of column: ________

Number of stars in each column: ________

Total number of stars: ________

6. 

Number of column: ________

Number of stars in each column: ________

Total number of stars: ________

7. 

Number of column: ________

Number of stars in each column: ________

Total number of stars: ________

8. 

Number of column: ________

Number of stars in each column: ________

Total number of stars: ________

WORK SPACE	
5.	6.
7.	8.

CHALLENGE: Choose an array from the Apply activity. If each star costs 2 LE, how much would it cost to buy the whole array? Draw the array that you chose below and then determine the cost. Do as many as time allows.

LESSON 16: MATH JOURNAL

Directions: Look at the star array below. Some of the stars have been ripped off. How many stars were in the original array? Explain your thinking using pictures, numbers, or words in the box below the star array.



LESSON 17: MATH JOURNAL

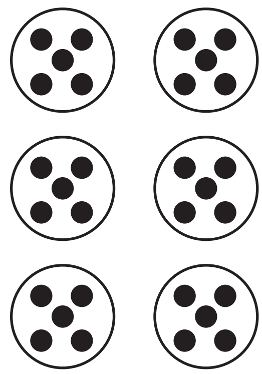
Directions: Reflect on your learning. Look at the two images below. Then, in the box answer the following questions.

- How are these similar?
- How are these different?
- Find the total. Do they both have the same total? How is that possible?

ARRAY

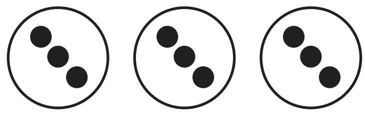


CIRCLES AND DOTS



LESSON 18: APPLY

Directions: In each box, play a round of Circles and Dots. Roll the die one time to identify the number of circles you will draw. Roll it again to identify how many dots you will draw in each circle. Once you have drawn your models, record a repeated addition equation and a multiplication equation. Then compare your **product** with your partner's using < , >, or =. See the example below.

Example: 

Repeated Addition (+) $3 + 3 + 3 = 9$

Multiplication (×) $3 \times 3 = 9$

Comparison 9 (My product) < 15 (Partner's product)

Round One:

Repeated Addition (+)

Multiplication (×)

Comparison ________ (My product) ◯ ________ (Partner's product)

Round Two:

Repeated Addition (+)

Multiplication (×)

Comparison ________ (My product) ◯ ________ (Partner's product)

Round Three:

Repeated Addition (+)

Multiplication (×)

Comparison ________ ◯ ________

(My product) (Partner’s product)

Round Four:

Repeated Addition (+)

Multiplication (×)

Comparison ________ ◯ ________

(My product) (Partner’s product)

Round Five:

Repeated Addition (+)

Multiplication (×)

Comparison ________ ◯ ________

(My product) (Partner’s product)

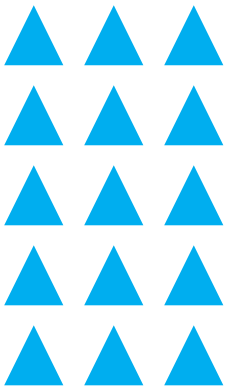
CHALLENGE: Draw a Circles and Dots board for the following equations and then find the product:

$5 \times 7 =$

$6 \times 9 =$

LESSON 19: APPLY, Part 1

Directions: Solve the problems below to determine whether or not there is a Commutative Property of Multiplication.

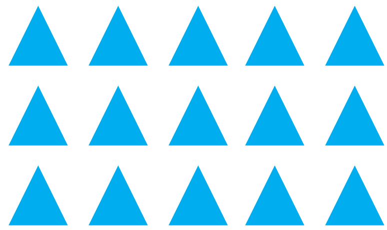


Number of rows: ________

Number of columns: ________

Total number of triangles: ________

________ × ________ = ________
rows columns product



Number of rows: ________

Number of columns: ________

Total number of triangles: ________

________ × ________ = ________
rows columns product



Number of rows: ________

Number of columns: ________

Total number of hearts: ________

________ × ________ = ________
rows columns product

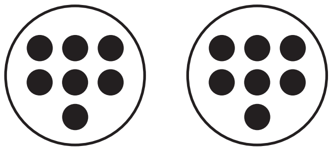


Number of rows: ________

Number of columns: ________

Total number of hearts: ________

________ × ________ = ________
rows columns product



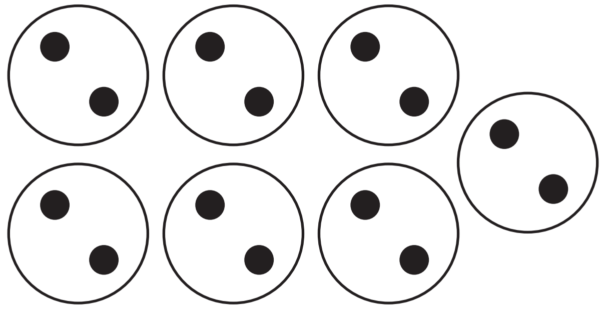
Number of circles: ________

Number of dots: ________

Total number of dots: ________

________ × ________ = ________

circles dots product



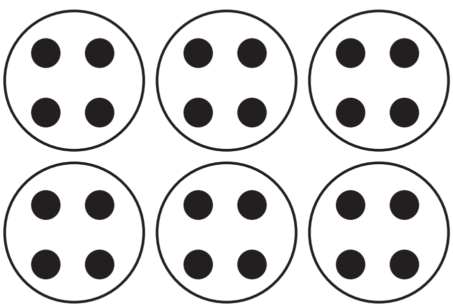
Number of circles: ________

Number of dots: ________

Total number of dots: ________

________ × ________ = ________

circles dots product



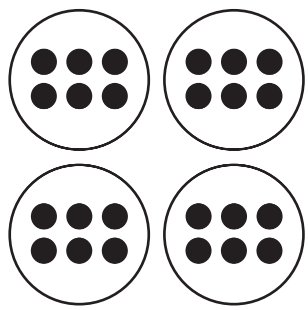
Number of circles: ________

Number of dots: ________

Total number of dots: ________

________ × ________ = ________

circles dots product



Number of circles: ________

Number of dots: ________

Total number of dots: ________

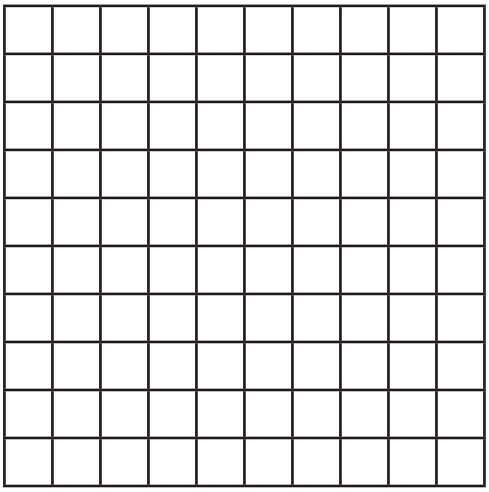
________ × ________ = ________

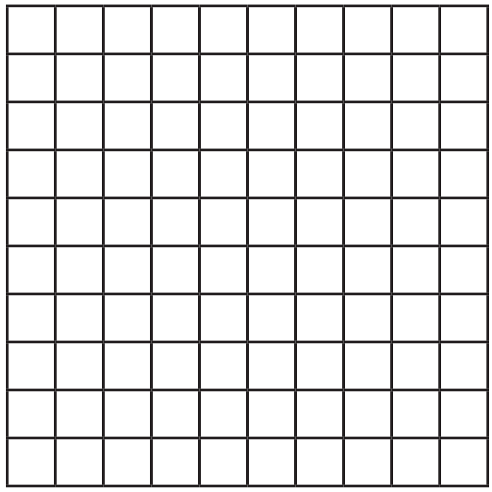
circles dots product

LESSON 19: APPLY, Part 2

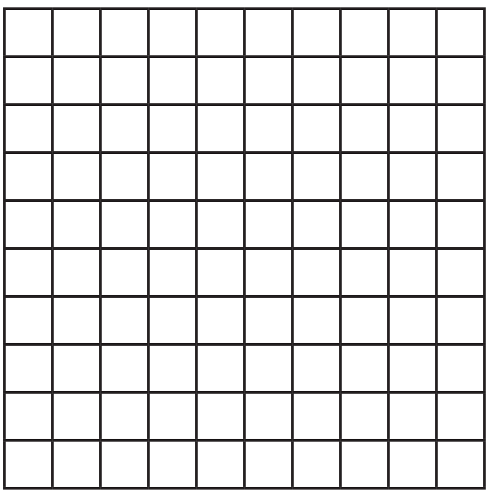
Directions: On the grids below, draw arrays that prove the Commutative Property of Multiplication. Label your grids with the **factors** (the two numbers you are multiplying) and **products** (the answers).

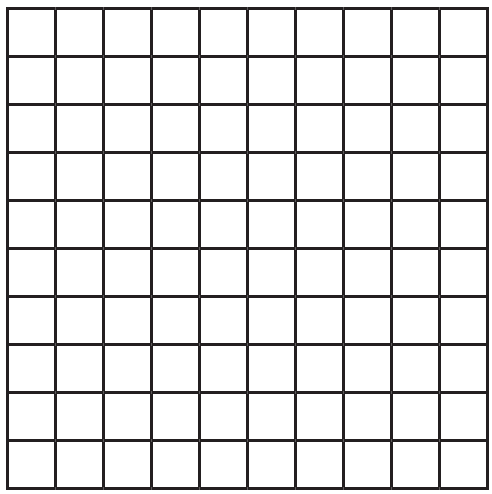
1.



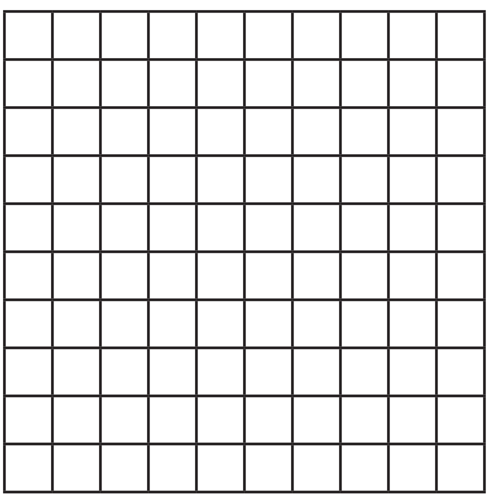


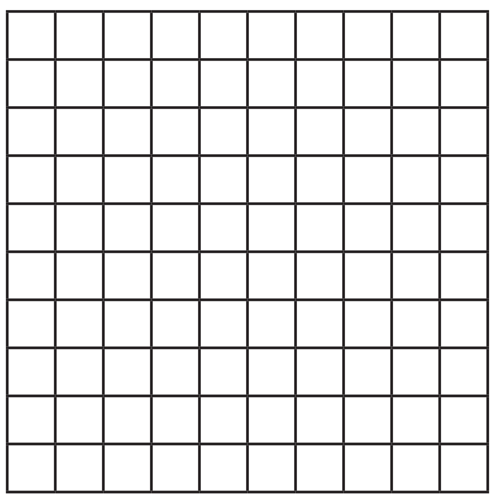
2.





3.





LESSON 19: MATH JOURNAL

Directions: Reflect on your learning. In the box below, explain **multiplication** and the **Commutative Property of Multiplication**. You can use words, pictures, or numbers to help you.

LESSON 20: APPLY

Directions for Array Block Game:

- Roll the die one time. That is the number of rows in your array.
- Roll the die a second time. That is number of columns in your array.
- Decide where you would like to create the array in the game board grid.
- Draw the array on your grid and color it in.
- Label the array with a multiplication equation and the product. Play until you cannot fit any more arrays on the grid.

Example:

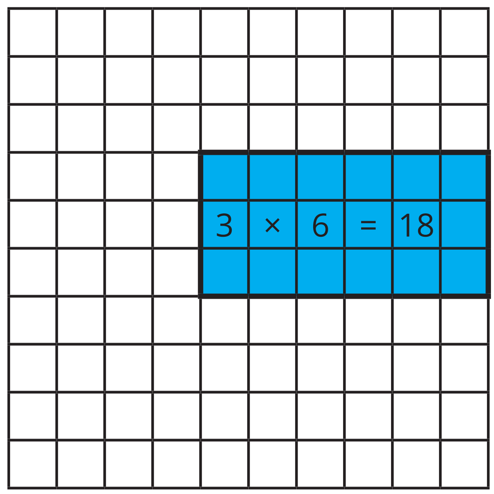
Player 1:

First roll: 3 → 3 rows

Second roll: 6 → 6 columns

3 × 6 = 18

Player 1's Game Board:



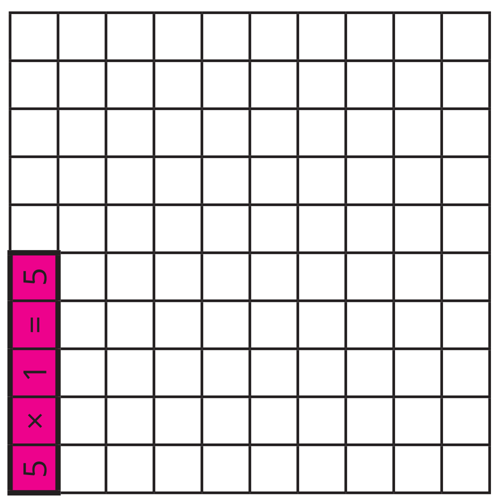
Player 2:

First roll: 5 → 5 rows

Second roll: 1 → 1 columns

5 × 1 = 5

Player 2's Game Board:



ARRAY BLOCKS GAME BOARD—GAME ONE

Number of empty blocks: ______________________

ARRAY BLOCKS GAME BOARD—GAME TWO

Number of empty blocks: ____________________

CHALLENGE:

1. How many squares did you color in on your first game board? Show how you solved this problem.

2. Can you answer the question above in another way?

3. Which counting strategy (from question 1 or question 2) was more efficient?

LESSON 21: APPLY

Example problem: Farha went to the store to buy rolls for a big family dinner. At the store, she bought 4 bags of rolls. Each bag contained 5 rolls. How many rolls did Farha buy?

Work Space:

Multiplication equation: ______________________________

PRACTICE:

- **Read each problem carefully.**
- **Show your thinking with pictures, numbers, and/or words.**
- **Record a multiplication equation that represents this problem.**

1. On Samira's walk home she saw 6 cars. If each car has 4 wheels, how many wheels did she see in all?

Work Space:

Multiplication equation: ______________________________

2. Manal brought 6 bags of cookies to school. Each bag had 3 cookies in it. How many cookies were there all together?

Work Space:

Multiplication equation: ______________________________

3. Malek runs 3 miles each day. How many miles does he run in 7 days?

Work Space:

Multiplication equation: ______________________________

4. A bag of oranges holds 4 oranges. How many oranges are in 8 bags?

Work Space:

Multiplication equation: ______________________________

5. It takes a rocket 7 seconds to travel one kilometer. How many seconds will it take to travel 4 kilometers?

Work Space:

Multiplication equation: ______________________________

6. Each pack of pencils contains 8 pencils. How many pencils are in 3 packs?

Work Space:

Multiplication equation: ______________________________

CHALLENGE:

1. Put the products from problems 1 to 6 above in order from least to greatest.

__________ , __________ , __________ , __________ , __________ , __________

2. Maisa was trying to figure out how to solve the multiplication problem 12 × 13 but was stuck. Can you show her how to work through this problem and what the product might be?

LESSON 22: APPLY

Directions: Read each story problem on your own. With a partner, match each story problem to its multiplication equation.

Part 1

Mariam had 4 sweaters. Each sweater had 3 buttons on it. How many total buttons are there on all the sweaters?	$6 \times 6 = 36$
Rana packed 6 boxes full of cans. Each box had 6 cans. How many total cans did Rana pack?	$3 \times 7 = 21$
Amir hiked for 3 days over the summer. Each day he hiked 7 miles. How many miles did he hike in all?	$4 \times 3 = 12$

Part 2

Record your equation here: ___________________________

Write a story problem that matches the equation above.

____

____

____

____

____

When you finish, find a partner with the same card. Work together to find the product.

Product: ___________________________

How did you solve this problem? Show your work below:

LESSON 22: MATH JOURNAL

Directions: Reflect on your learning. Write a response to the questions in the box below.

- Think about multiplication story problems. Is it easier to solve them or write one?
- What do you think is easy about solving multiplication story problems?
- What do you still find challenging about solving multiplication story problems?

LESSON 23: APPLY

Directions: Use the 120 Chart below to complete the following:

- **Color the multiples of 2 ____________________ (color stated by teacher).**
- **Color the multiples of 3 ____________________ (color stated by teacher).**
- **Respond to the prompts at the bottom of the page.**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

List the first 10 multiples of 2.

_______ , _______ , _______ , _______ , _______ , _______ , _______ , _______ , _______ , _______

List the first 10 multiples of 3.

_______ , _______ , _______ , _______ , _______ , _______ , _______ , _______ , _______ , _______

List all of the multiples you found that 2 and 3 share:

LESSON 23: MATH JOURNAL

Directions: Reflect on your learning. Predict a number greater than 120 that would be a multiple of both 2 and 3. Explain why you think your prediction is correct.

LESSON 24: APPLY

Directions: Use the 120 Chart to complete the following:

• Color the multiples of 10 ____________ (color stated by teacher).

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Write the equations for the multiples of ten. The first two have been done for you.

10 × 1 = 10

10 × 2 = 20

10 × 3 = ______

10 × 4 = ______

10 × ______ = ______

10 × ______ = ______

10 × ______ = ______

10 × ______ = ______

10 × ______ = ______

10 × ______ = ______

10 × ______ = ______

10 × ______ = ______

LESSON 24: APPLY, continued

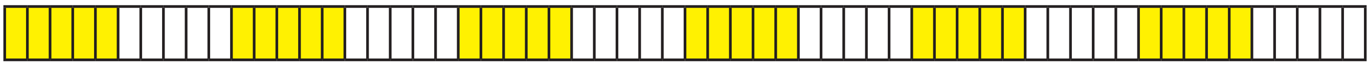
Directions: Use the 120 Chart on the previous page to complete the following:

- Color the multiples of 5 ______________ (color stated by teacher).
- Write the equations for the multiples of five. The first two have been done for you.

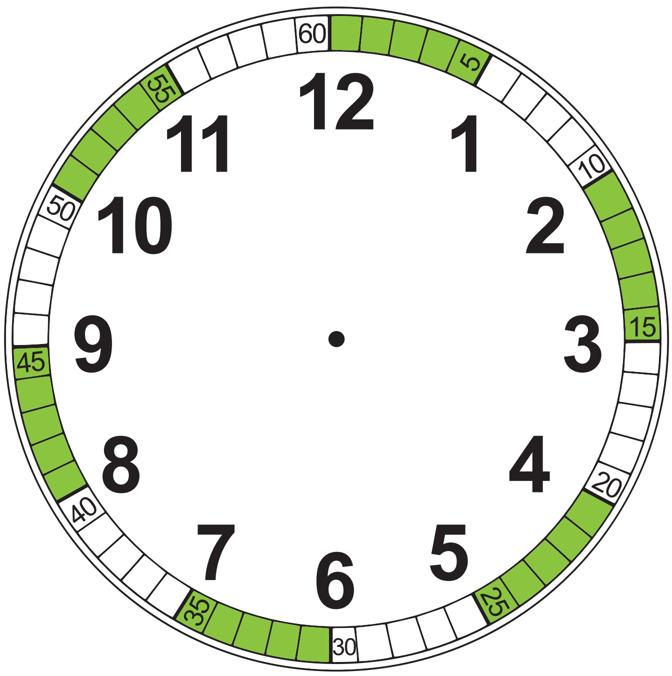
5	×	1	=	5	5	×	____	=	____
5	×	2	=	10	5	×	____	=	____
5	×	3	=	____	5	×	____	=	____
5	×	4	=	____	5	×	____	=	____
5	×	____	=	____	5	×	____	=	____
5	×	____	=	____	5	×	____	=	____

LESSON 26: APPLY

Picture #1:



Picture #2:

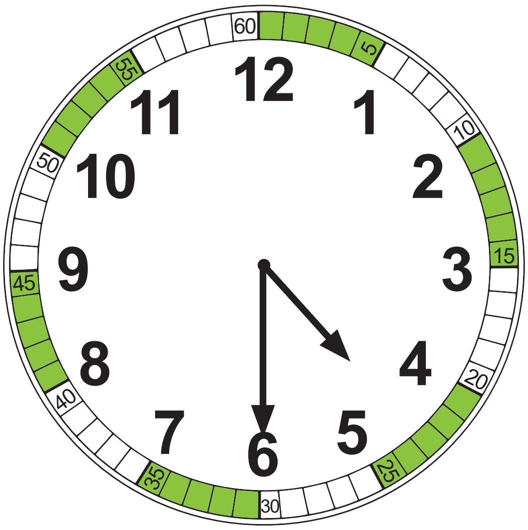


Group Practice:

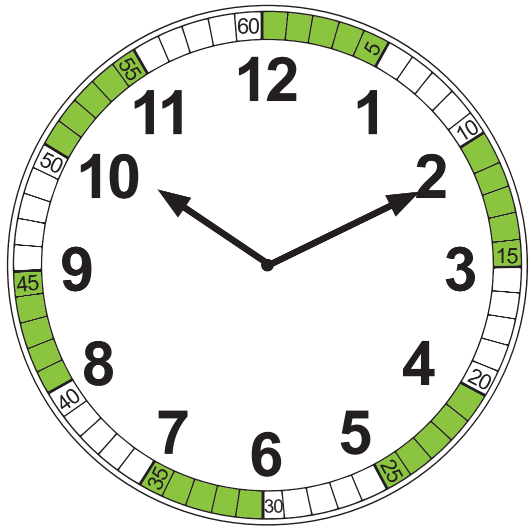
Clock One		**Clock Two**	
Hour	Minutes	Hour	Minutes
______ :	______	______ :	______

PARTNER PRACTICE:

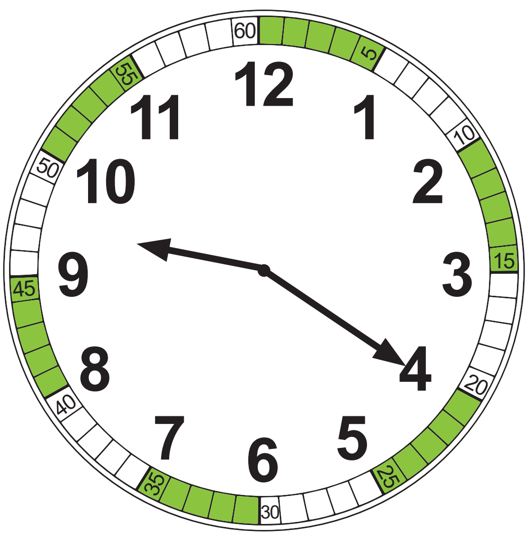
Directions: Look at each of the clocks below. Determine the time on the analog clock and write the digital time below. Remember that each hour number represents a group of 5 minutes.



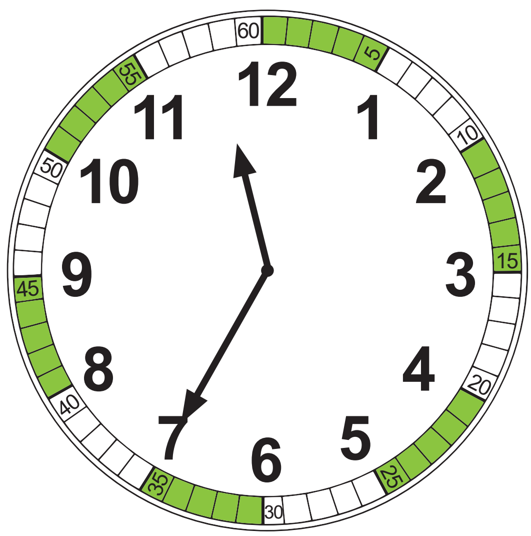
________ : ________



________ : ________



________ : ________



________ : ________

LESSON 27: APPLY

Directions: Play "Who Has the Later Time?" with your Shoulder Partner.

- **Pick a card to tell you how many groups of 5 minutes have passed.**
- **Record the minutes on the digital clock. The hour is already decided for you.**
- **Draw the minute hand on the analog clock.**

Round One:



1 : ______

Round Two:



2 : ______

Round Three:



7 : ______

Round Four:



4 : ______

Round Five:



10 : ______

CHALLENGE: Time Story Problems

1. Your mom puts muffins in the oven at 7:00. When you take them out, the clock looks like this:



How many minutes did it take to bake the muffins?

2. You leave school at 3:00 and when you get home the clock looks like this:



How many minutes did it take you to walk home?

3. If it takes you 45 minutes to walk home from school and you leave at 3:00, what time will it be when you get home? Draw the time on the clock.



LESSON 27: MATH JOURNAL

Directions: Reflect on what you have learned about telling time. Look at the analog clock below and the time that is recorded on the digital clock. Decide if the digital time is correct for the clock shown. If it is, explain why. If it is not, explain why and provide the correct time. Write your response in the box below.

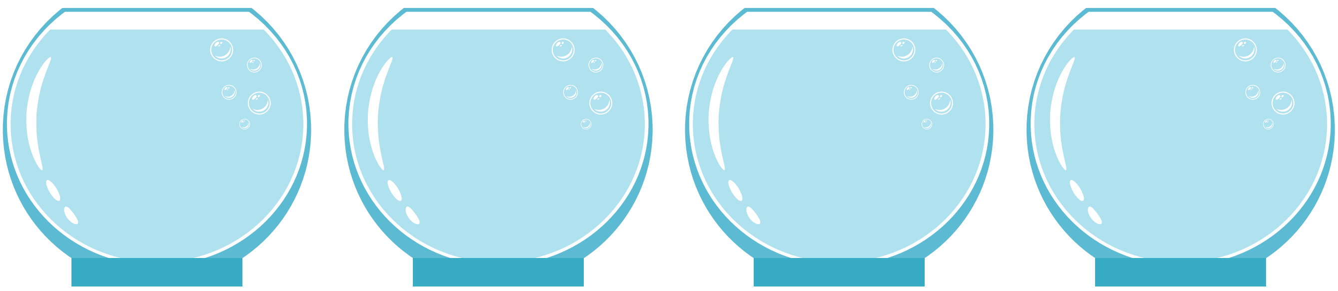




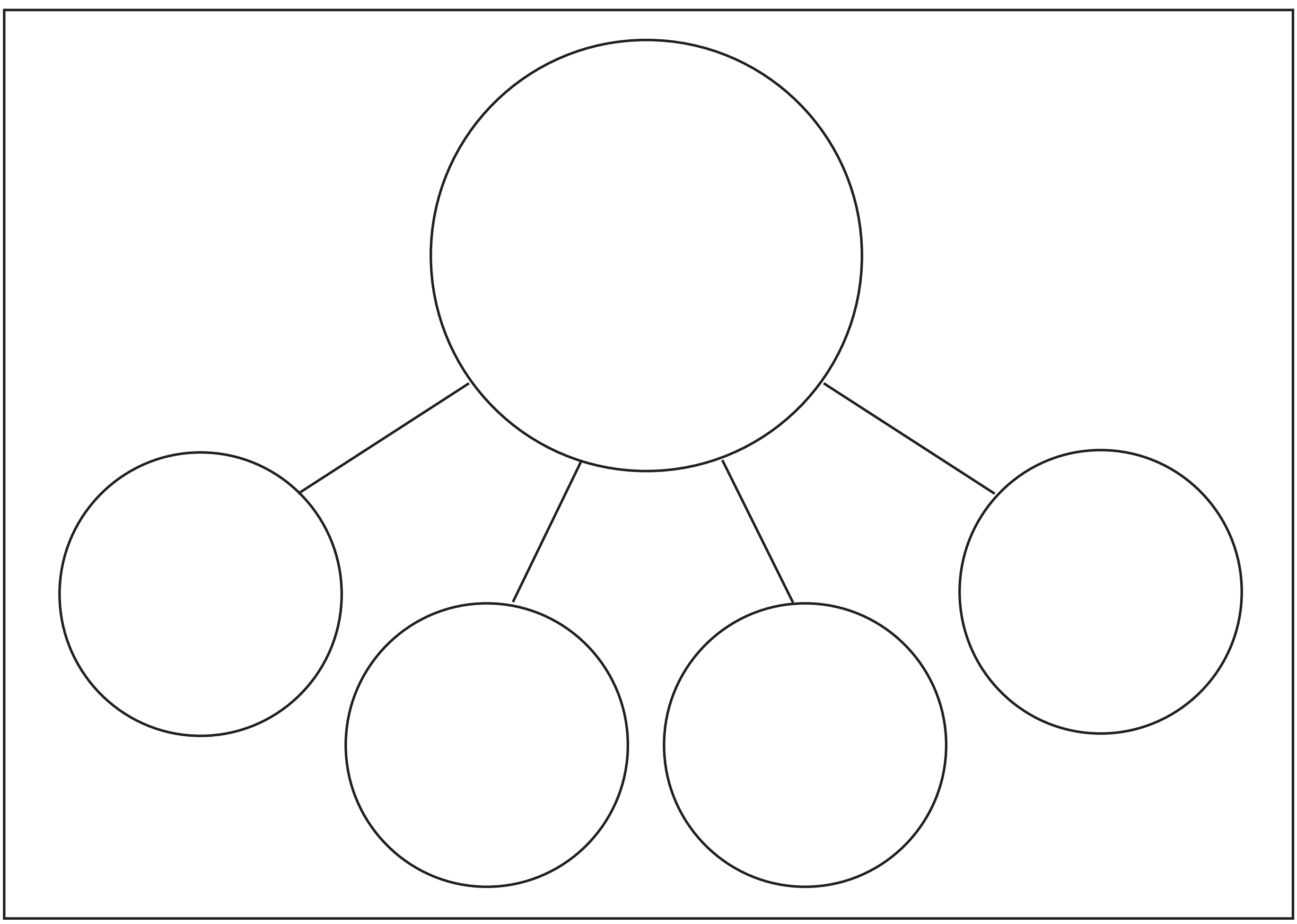
LESSON 28: APPLY

Directions: Solve the sharing problems below.

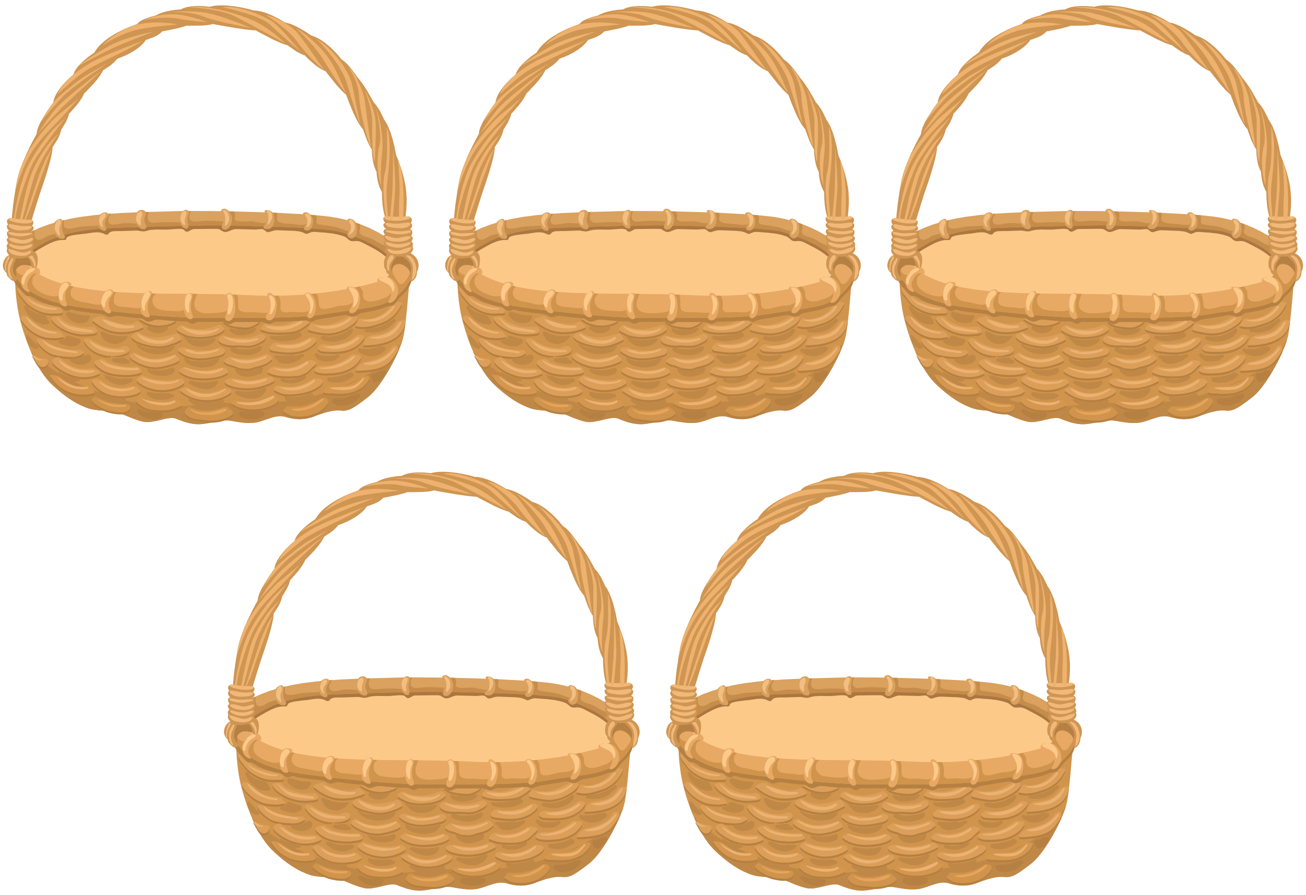
1. There are 16 fish that need to be placed in 4 bowls. Each bowl must hold the same number of fish. How many fish should be put into each bowl? Draw a picture in the bowls below to solve the problem.



Draw a part-part-whole model in the box below to show your answer.

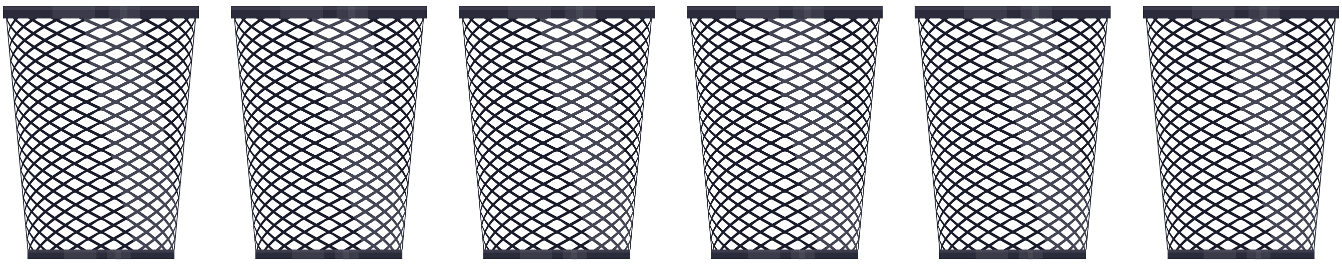


2. Sameh is preparing gift baskets. He has 20 oranges that need to be divided equally between 5 baskets. Draw a picture in the baskets below to solve the problem.



Draw a part-part-whole model in the box below to show your answer.

3. The teacher has 36 crayons to share equally between 6 students. She must place the crayons in the cups below. Draw a picture in the cups below to solve the problem.



Draw a part-part-whole model in the box below to show your answer.

LESSON 28: MATH JOURNAL

Directions: Reflect on your learning. In the box below, write a sharing story problem using the numbers 15 and 3. Then solve the problem and show your work with both a picture and a part-part-whole model.

LESSON 29: APPLY

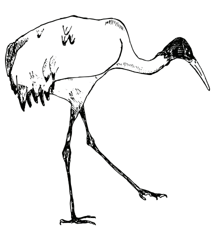
Example #1:

Directions: Draw a mathematical picture to solve.

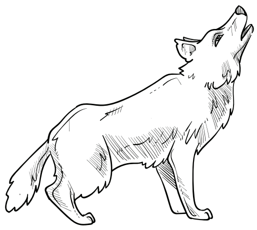
Each cat needs 2 fish for lunch. How many cats can we feed with 12 fish?

Directions: Solve the following grouping problems to figure out how many animals can eat. You can use counters to help you. Please draw and show all of your work.

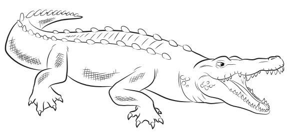
1. Each ibis will eat 3 worms. You have 18 worms. How many ibis can be fed?



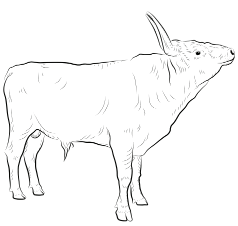
2. Each jackal must eat 6 insects. There are 24 insects. How many jackals can be fed?



3. Each crocodile wants to eat 5 fish. There are 25 fish. How many crocodiles can be fed?

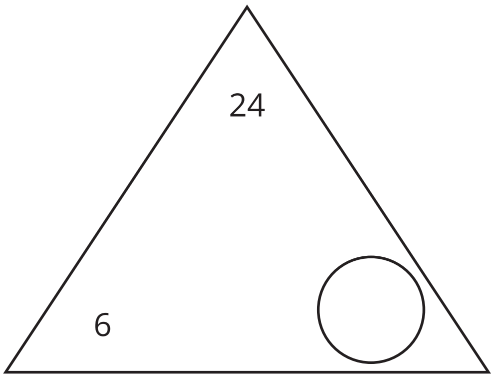


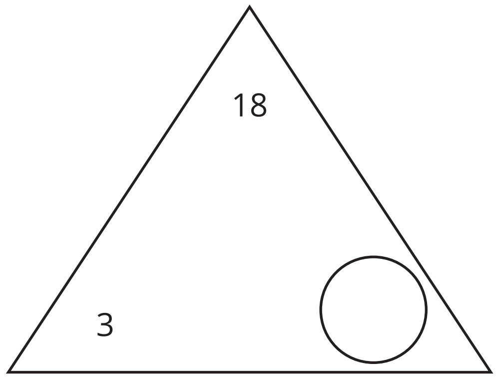
4. Each bull eats 2 bales of hay each day. There are 100 bales. How many bulls can be fed each day?



LESSON 30: APPLY

Directions: Find the missing factor in the triangles below. Then write the four equations that go with the fact family. Use the counters to help you.





_____ × _____ = _____

_____ × _____ = _____

_____ ÷ _____ = _____

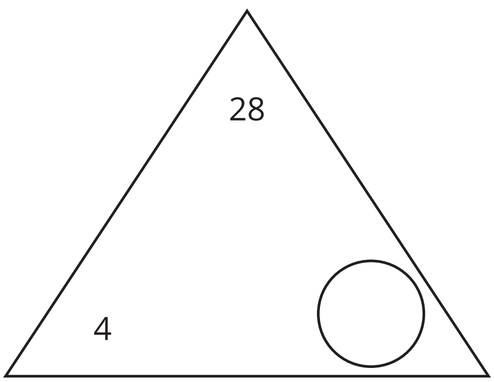
_____ ÷ _____ = _____

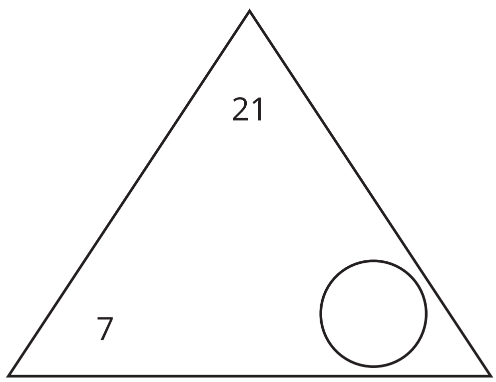
_____ × _____ = _____

_____ × _____ = _____

_____ ÷ _____ = _____

_____ ÷ _____ = _____





_____ × _____ = _____

_____ × _____ = _____

_____ ÷ _____ = _____

_____ ÷ _____ = _____

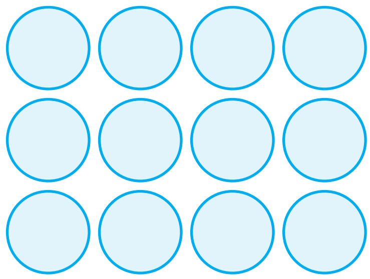
_____ × _____ = _____

_____ × _____ = _____

_____ ÷ _____ = _____

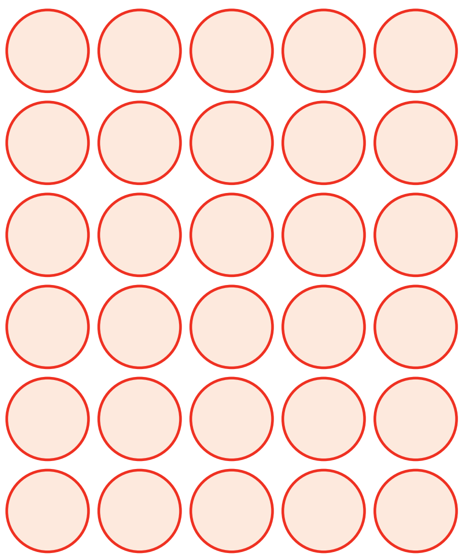
_____ ÷ _____ = _____

CHALLENGE: Describe each of these arrays using one multiplication equation and one division equation.



____ × ____ = ____

____ ÷ ____ = ____



____ × ____ = ____

____ ÷ ____ = ____

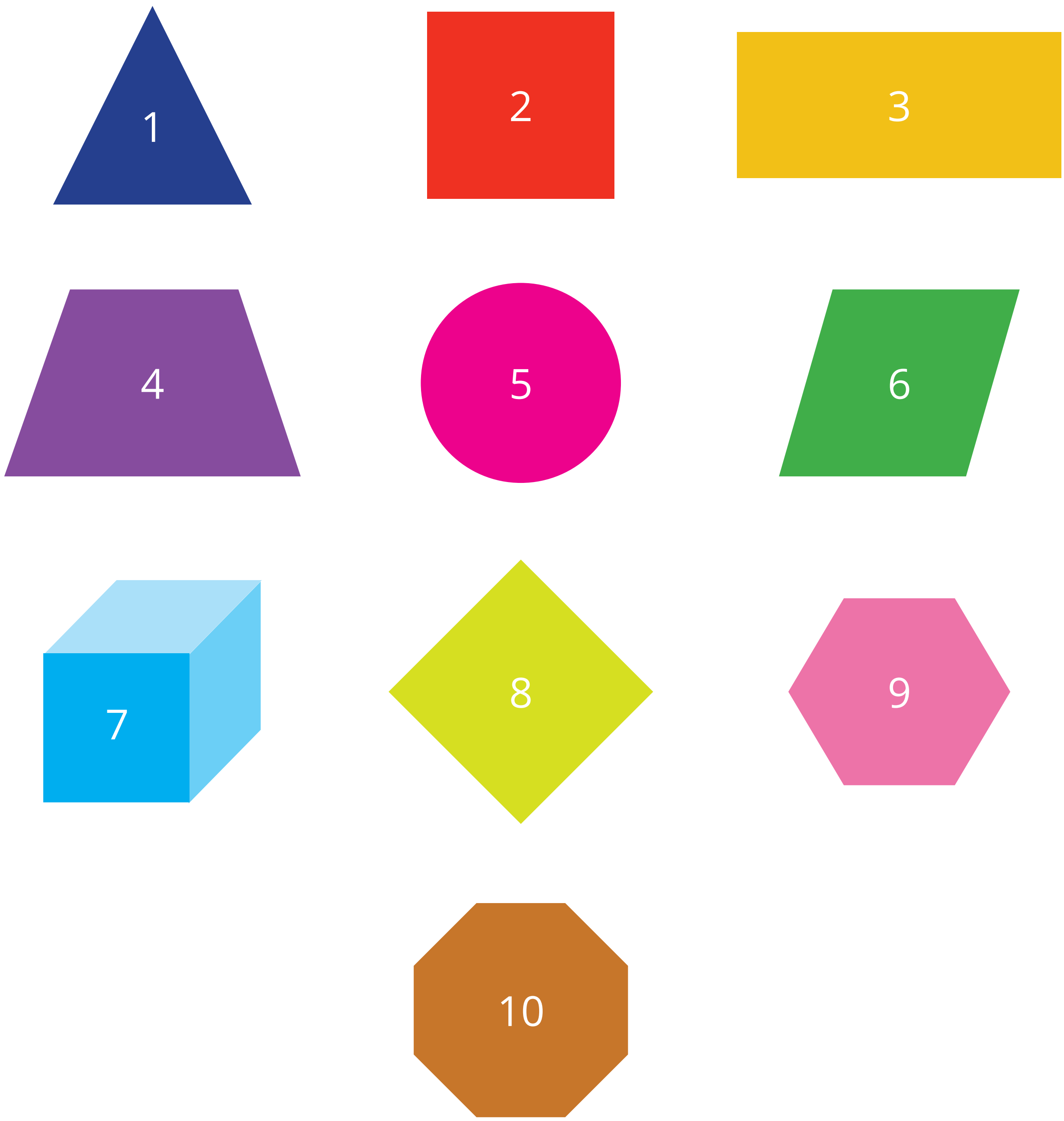
Draw and write your own array with two connected multiplication and division problems.

LESSON 31: APPLY

Directions: Do the following.

First, name each shape with your partner.

- Then sort the shapes below into categories.
- Label each category.
- Write the number of the shape that belongs in the category or draw it.



Category Title: Four Vertices Square Rectangle	Category Title:
Category Title:	Category Title:
Category Title:	Category Title:

CHALLENGE:

Write a list of attributes for one of the shapes below. Not all of these are polygons.



Could any of these shapes fit into one of your categories from above? Explain.

LESSON 31: MATH JOURNAL

Directions: Reflect on your learning. In your own words, explain what a polygon is. Draw two examples. Then, in your own words, explain what a parallelogram is. Draw two examples.

LESSON 32: CONNECT

Directions: Find the missing factor by rolling the die or choosing a number card. Record the missing factor in one of the problems below and then solve. When finished, circle the facts that were the easiest for you to solve.

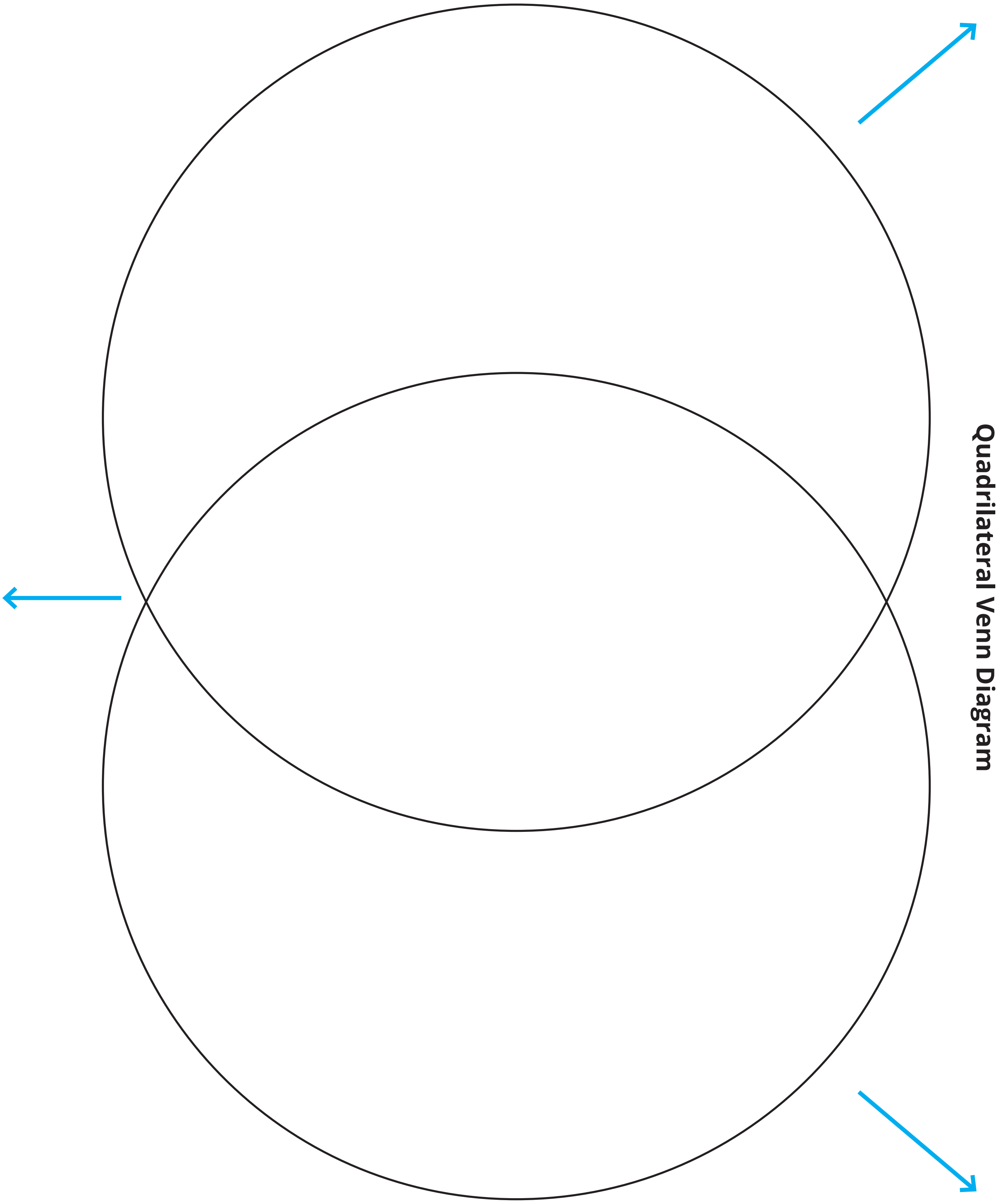
Mystery Multiplication

1 × ______ = ______	2 × ______ = ______	3 × ______ = ______
4 × ______ = ______	5 × ______ = ______	6 × ______ = ______
7 × ______ = ______	8 × ______ = ______	9 × ______ = ______
10 × ______ = ______	11 × ______ = ______	12 × ______ = ______

Work space:

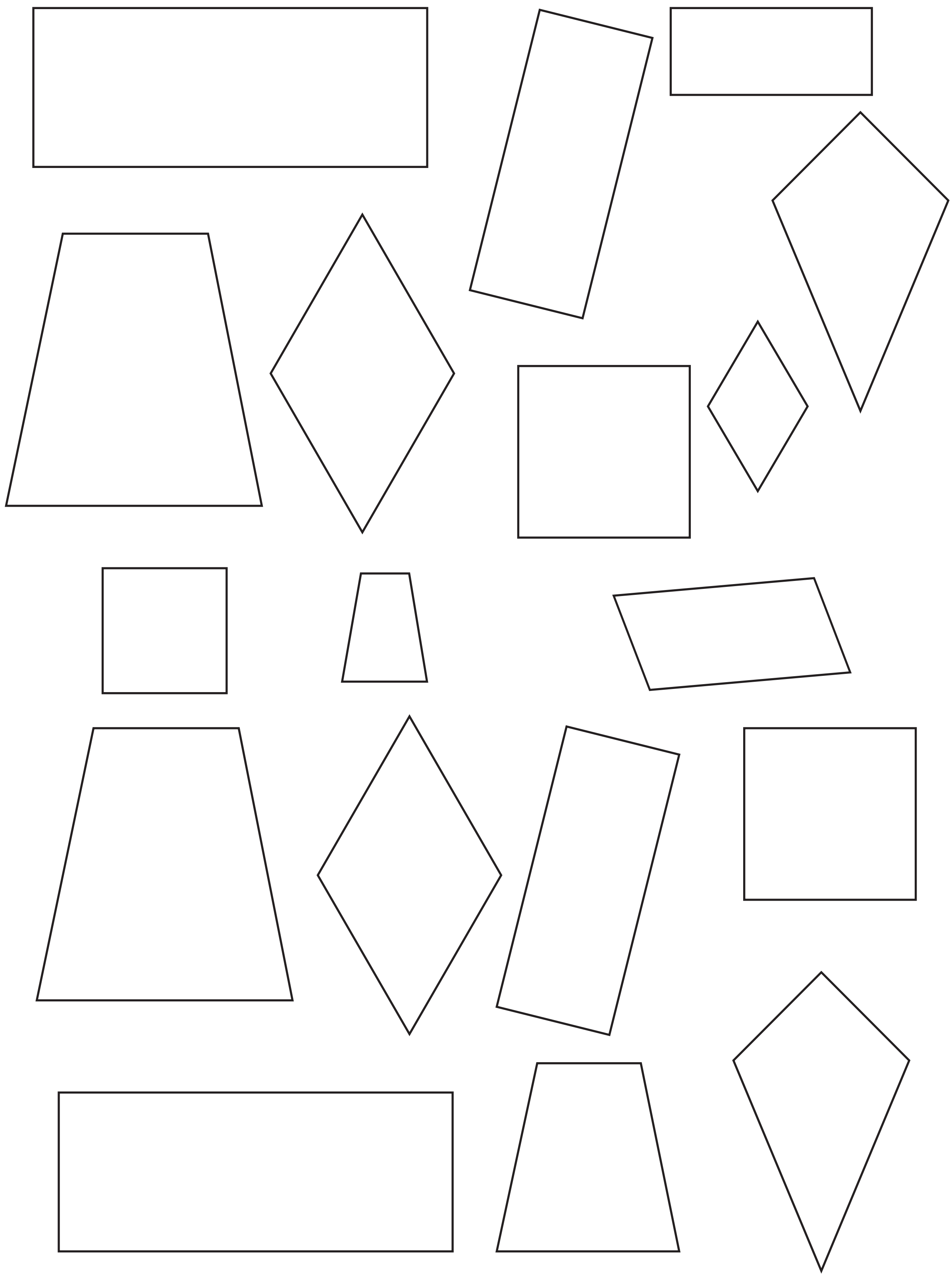
LESSON 32: APPLY

Directions: Using the quadrilateral sheet, cut out the shapes and place them where they belong on the Venn diagram below. Label each circle and the intersection.



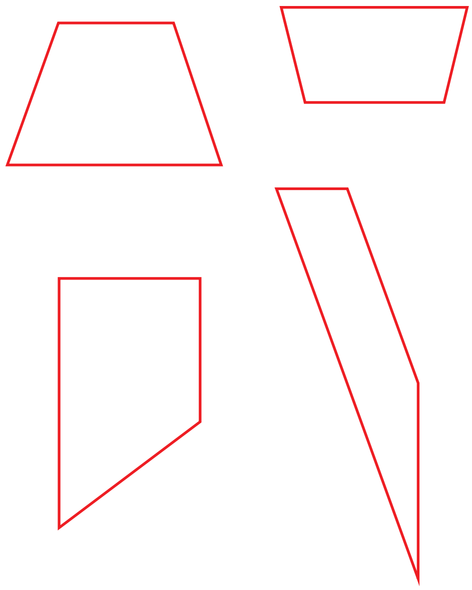
QUADRILATERALS

Directions: Tear out this page and cut out the quadrilaterals. Sort them and glue them onto the Venn diagram.

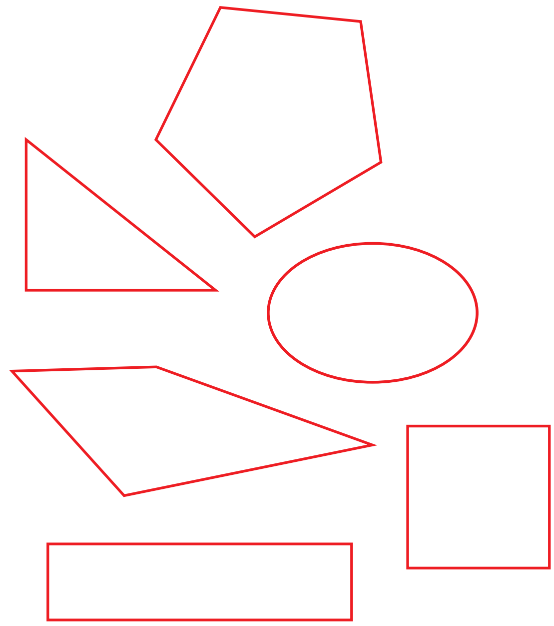


LESSON 33: CONNECT

These are trapeziums.



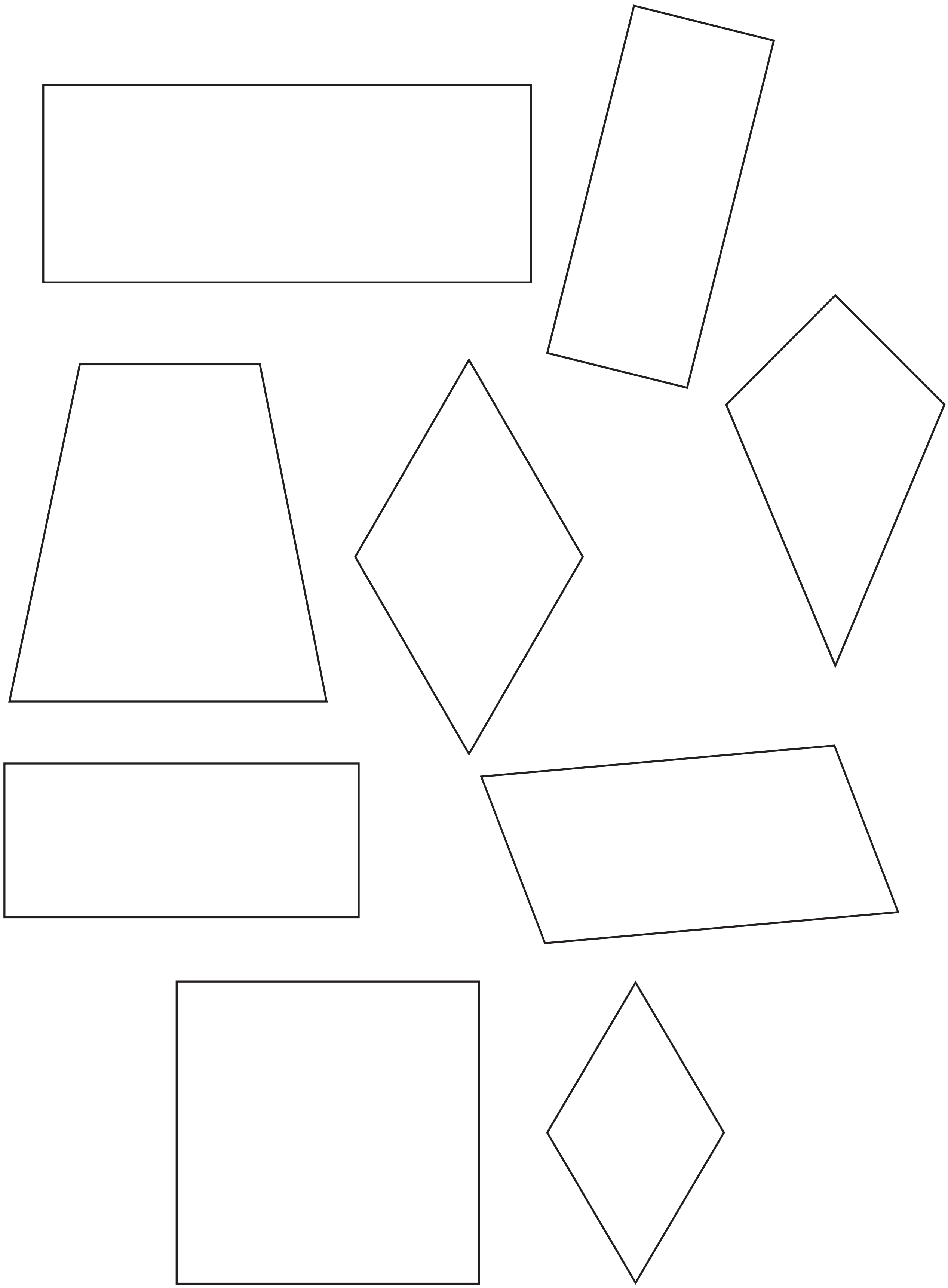
These are not trapeziums.

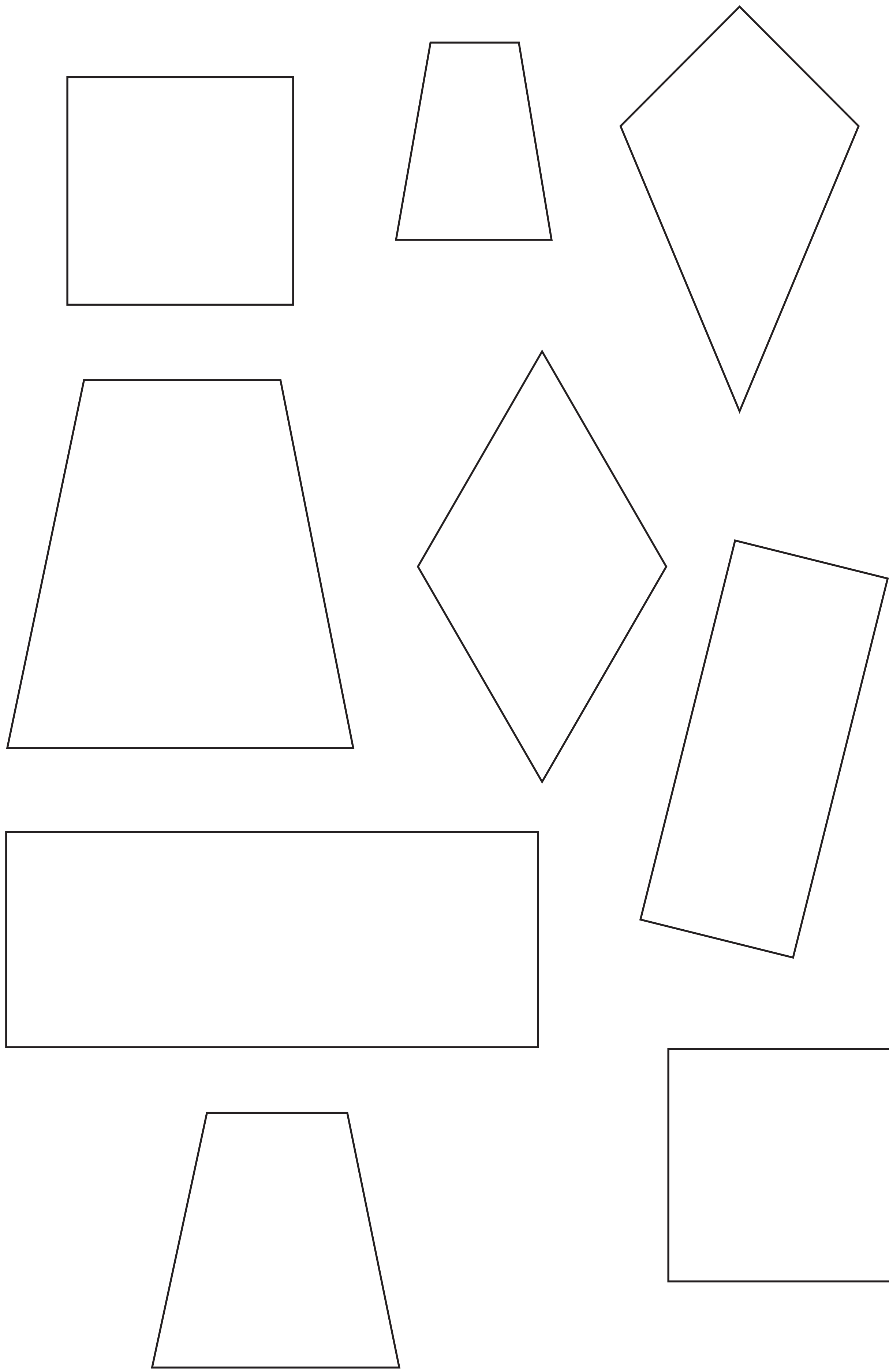


Directions: Write a definition of a trapezium in your own words. Compare your definition with a partner's.

LESSON 33: APPLY

Directions: Tear out this page and cut out quadrilaterals to use for your quadrilateral image.

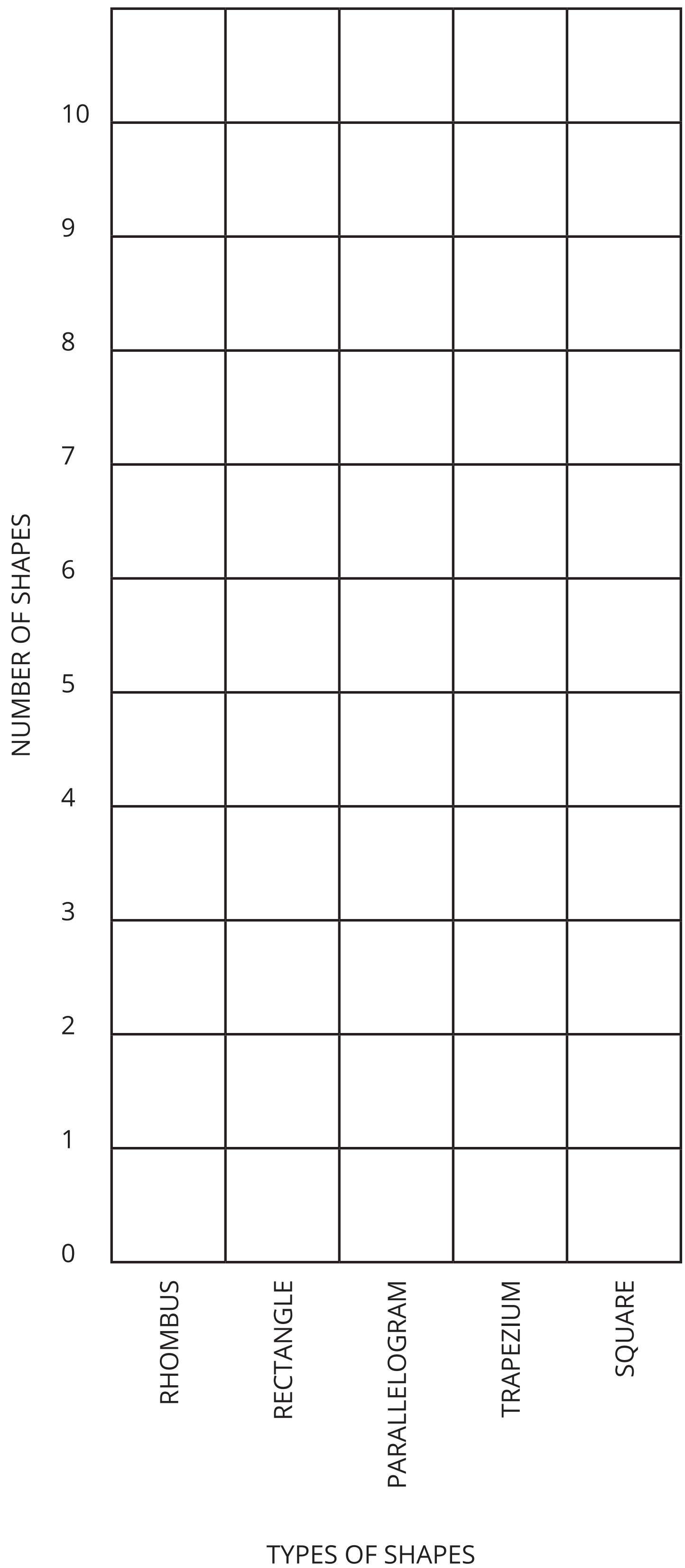




LESSON 33: APPLY, continued

Directions: Once your picture is complete, fill out the bar graph below.

QUADRILATERAL GRAPH



LESSON 33: MATH JOURNAL

Directions: Reflect on your learning. Write two statements about the data in your bar graph. Then write one question that could be answered using your graph.

LESSON 34: CONNECT

Directions: Find the missing factor by rolling the die or choosing a number card. Record the missing factor in one of the problems below and then solve. When finished, draw a rhombus around the fact that was the most challenging and a trapezium around the easiest fact.

Mystery Multiplication

1 × _____ = _____	2 × _____ = _____	3 × _____ = _____
4 × _____ = _____	5 × _____ = _____	6 × _____ = _____
7 × _____ = _____	8 × _____ = _____	9 × _____ = _____
10 × _____ = _____	11 × _____ = _____	12 × _____ = _____

Work space:

LESSON 34: APPLY

Directions: Follow the steps below.

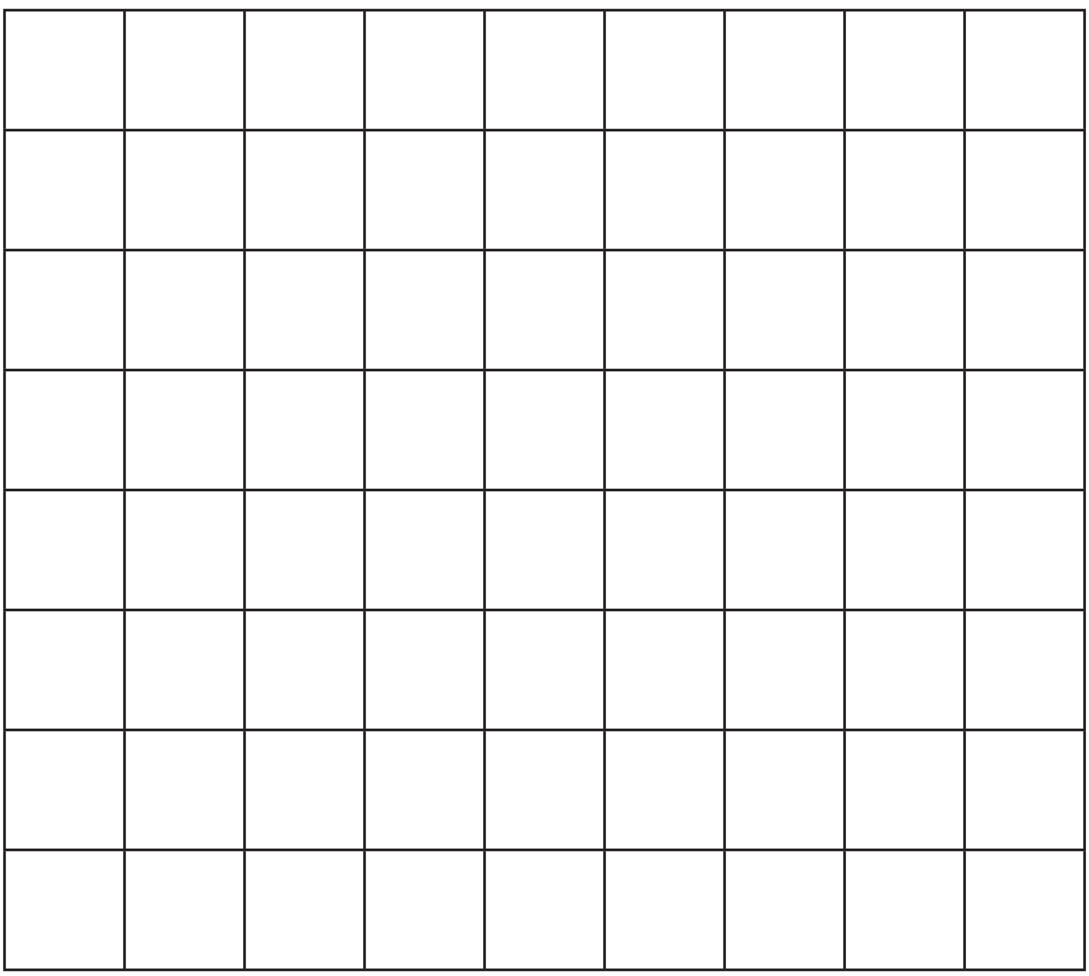
1. **Read the problem and then build the garden plot using the small squares.**
2. **Draw the garden plot on the grid paper. (Hint: You can place your squares on the grid to help you draw the outlines of the garden plot.)**
3. **Find the total area of the garden plot (array).**
4. **Repeat for all garden plots.**

GARDEN PLOT PROBLEMS	ANSWERS
Garden Plot #1: Jana is planting squash. Each squash needs 1 square unit of space. She would like the garden to have 2 rows with 9 square units in each row. How many squash can she fit? What is the area of her garden in square units?	
Garden Plot #2: Omar wants to plant corn. Corn needs 1 square unit of space. He would like the garden to have 3 rows with 7 square units in each row. How much corn can Omar fit in his garden? What is the area of his garden in square units?	
Garden Plot #3: Youssef loves watermelon and wants to plant it in his garden. Watermelon needs 1 square unit of space. He would like the garden to have 4 rows with 4 square units in each row. How many watermelons can Youssef fit in his garden? What is the area of his garden in square units?	
Garden Plot #4: Nadia wants to plant zucchini. Zucchini needs 1 square unit of space. She would like the garden to have 3 rows with 4 square units in each row. How much zucchini can Nadia fit in her garden? What is the area of her garden in square units?	
Garden Plot #5: Aya wants to plant lettuce. Lettuce needs 1 square unit of space. She would like the garden to have 5 rows with 8 square units in each row. How much lettuce can Aya fit in her garden? What is the area of her garden in square units?	

CHALLENGE:

1. If Jana, Omar, Youssef, Nadia, and Aya all put their gardens together, what would be the total area? How many total square units would they need?

2. Heba has two rectangular gardens, one for lettuce and one for squash. The squash takes up 12 square units and the lettuce takes up 10 square units. What could her gardens look like? (Remember, the gardens are rectangles with the same number of square units in each row.) Draw the gardens below. They must fit on the grid paper.

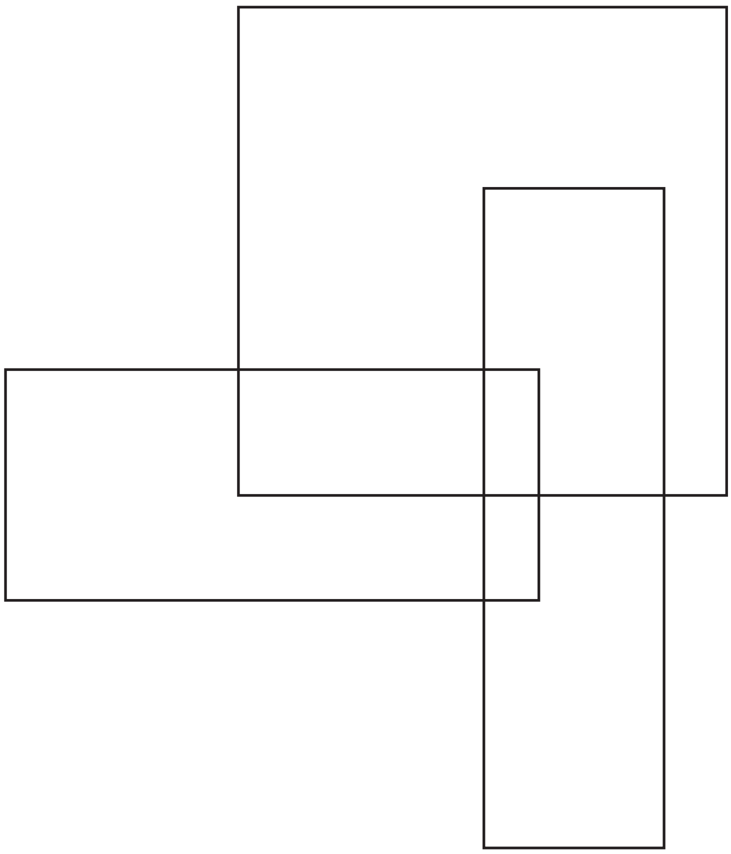


LESSON 34: MATH JOURNAL

Directions: Reflect on your learning. How is finding the area of garden plots similar to solving multiplication problems? Explain your thinking in the box below. You may also use pictures.

LESSON 35: CONNECT

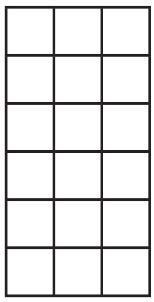
Directions: Look at the puzzle below. How many rectangles can you find? You may color or number them (or use another method) to help you keep track.



LESSON 35: APPLY

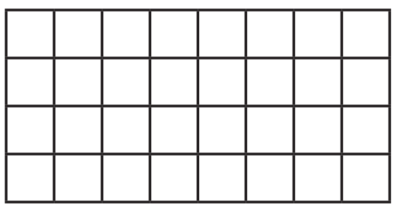
Directions: Determine the area of each rectangle. Explain the strategy you used in the work space provided next to each shape and record the answer.

Rectangle #1:



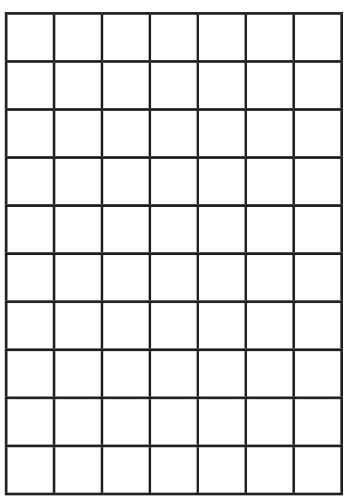
Total area = ____________ square units

Rectangle #2:



Total area = ____________ square units

Rectangle #3:



Total area = ____________ square units

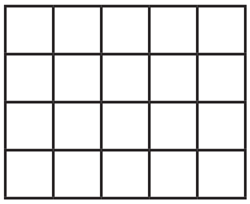
Work Space

Rectangle #1:

Rectangle #2:

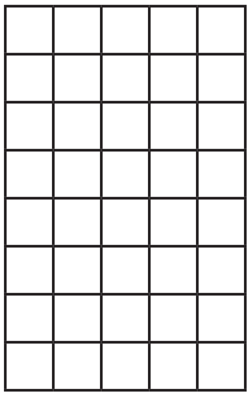
Rectangle #3:

Rectangle #4:



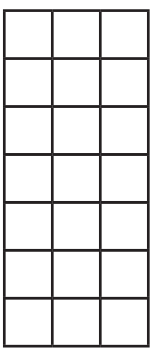
Total area = ____________ square units

Rectangle #5:



Total area = ____________ square units

Rectangle #6:



Total area = ____________ square units

Work Space

Rectangle #4:

Rectangle #5:

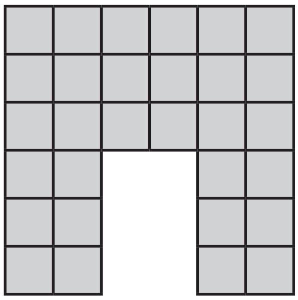
Rectangle #6:

CHALLENGE:

These gardens are not rectangular. Can you find the area anyway?
Show your thinking.

Work Space

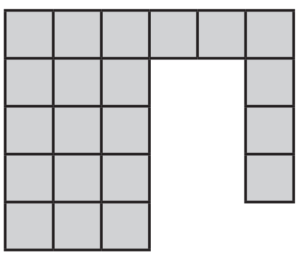
Problem 1:



Total area = ___________ square units

Problem 1:

Rectangle #2:

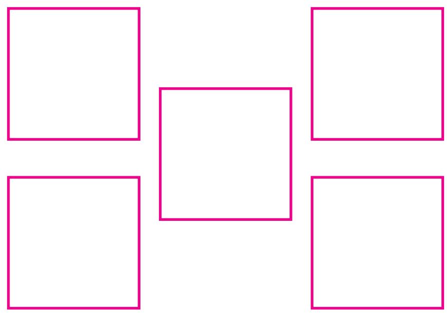


Total area = ___________ square units

Rectangle #2:

LESSON 36: CONNECT

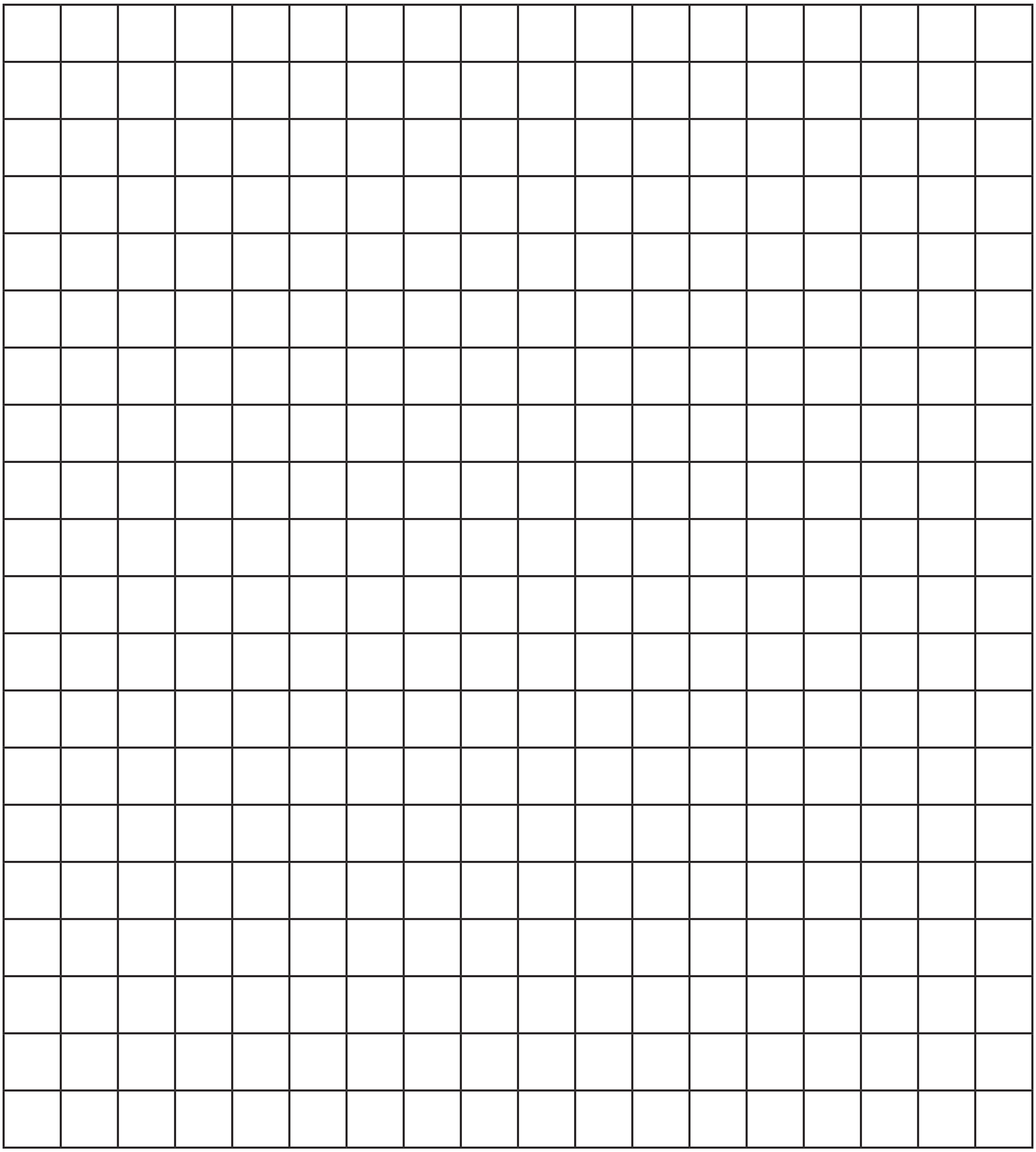
Directions: Solve the following problem: Mohammad makes a drawing with 5 squares. Mona makes the same drawing but uses triangles. It takes 2 triangles to make a square. How many triangles does Mona draw?



Show your work in the box below.

LESSON 36: APPLY

Directions: On the grid below, draw and label as many rectangles as you can with an area of 18 square units. Then write equations that match your rectangles.



List your arrays as equations below:

CHALLENGE: Use the Commutative Property to answer the following.

What is another way you could write:

$3 \times 7 = 21$ ______________________

$6 \times 2 = 12$ ______________________

$4 \times 10 = 40$ ______________________

LESSON 36: MATH JOURNAL

Directions: Reflect on what you have learned about area, arrays, and multiplication.

Omar planted two flower plots. One was 3 × 4 and one was 2 × 6. Do they have the same area? How do you know? Show your thinking in numbers and pictures in the box below.

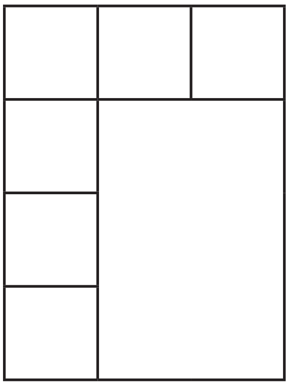
LESSON 37: CONNECT

Directions: Play Mystery Multiplication. Select two number cards, create an array using the two numbers as your factors, write the equation, and then find the product.

LESSON 37: APPLY

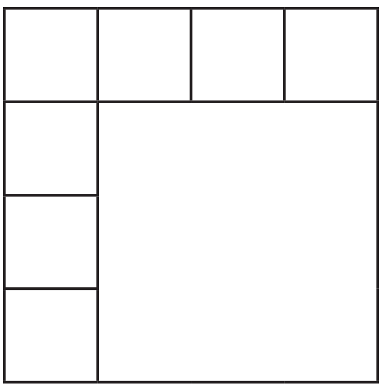
Directions: Determine the total area of each shape.

Rectangle #1:



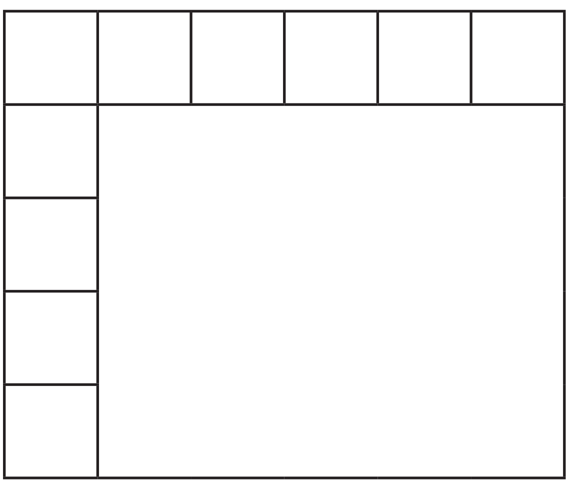
Total area = ____________ square units

Rectangle #2:



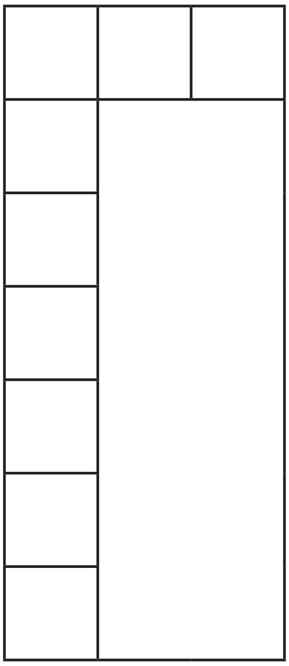
Total area = ____________ square units

Rectangle #3:



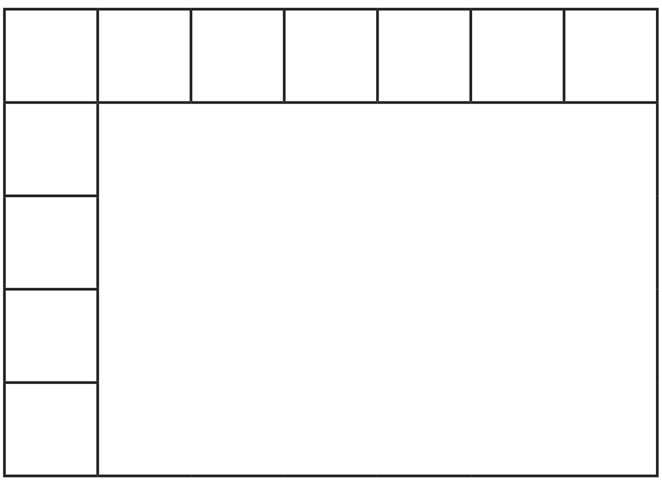
Total area = ____________ square units

Rectangle #4:



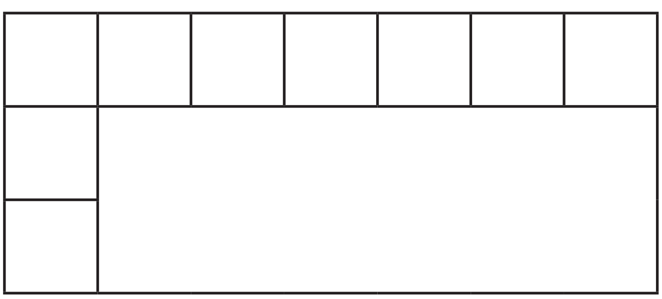
Total area = ____________ square units

Rectangle #5:



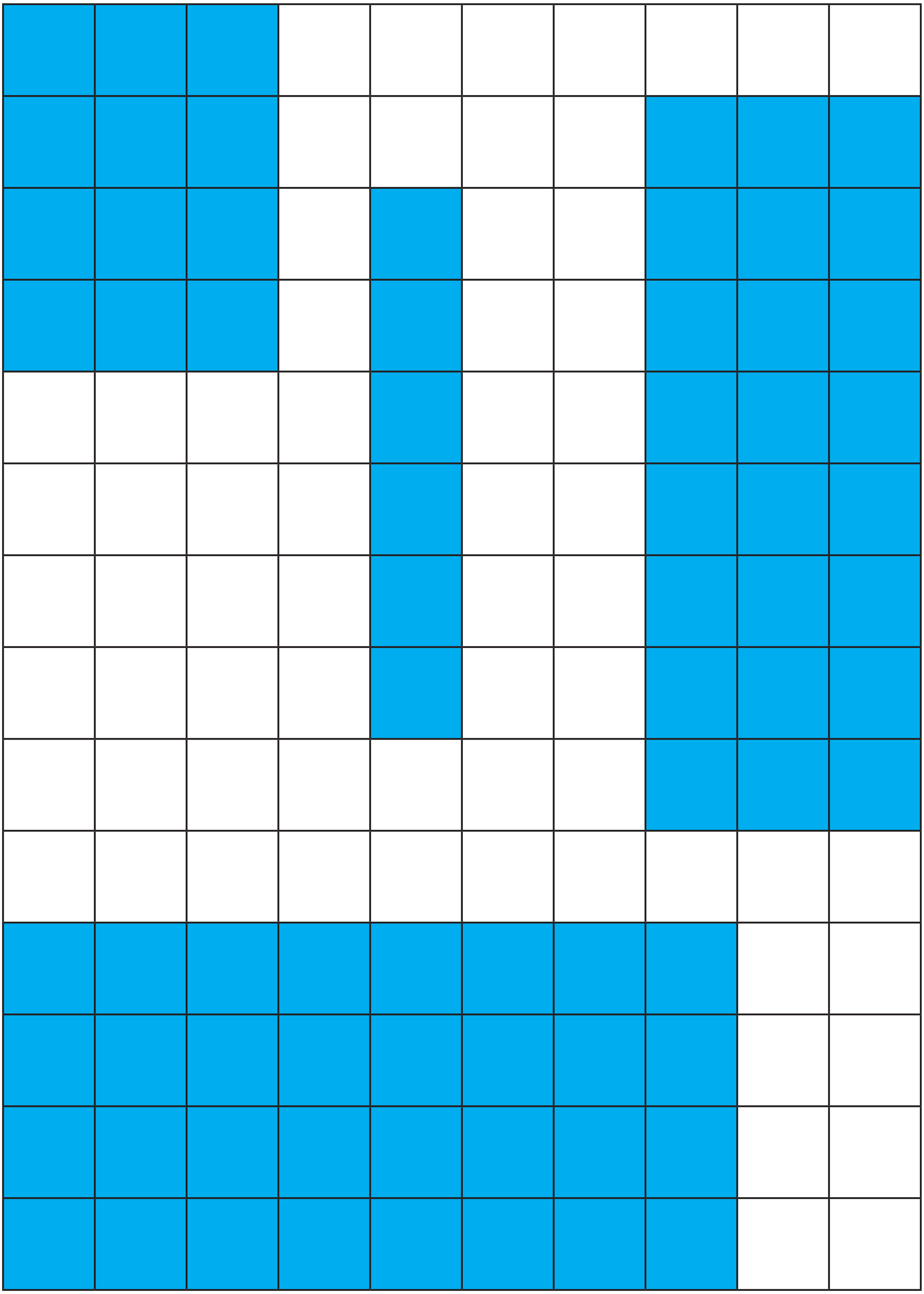
Total area = ____________ square units

Rectangle #6:



Total area = ____________ square units

CHALLENGE: Determine the total area of the following shapes.



LESSON 37: MATH JOURNAL

Directions: Reflect on what you have learned about area. Then answer the following questions using words and pictures.

How would you explain area to a younger friend? Write your answer below.

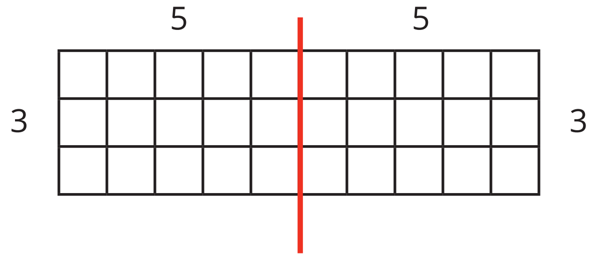
How do you determine the area of a rectangle? Write your answer below.

When might you need to find the area of a rectangle in real life? Write your answer below.

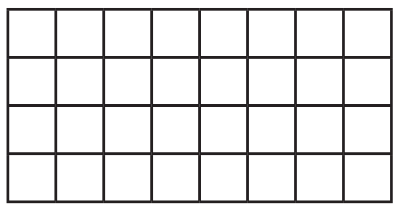
LESSON 38: APPLY

Directions: Split the arrays below into at least 2 smaller arrays. Label the factors for each part. An example is shown below.

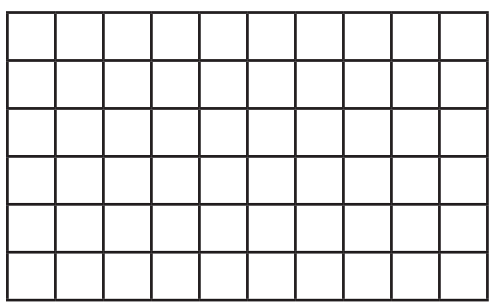
Example



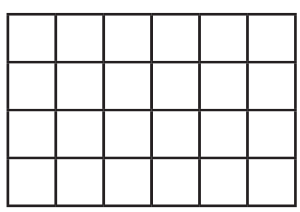
Problem #1



Problem #2



Problem #3

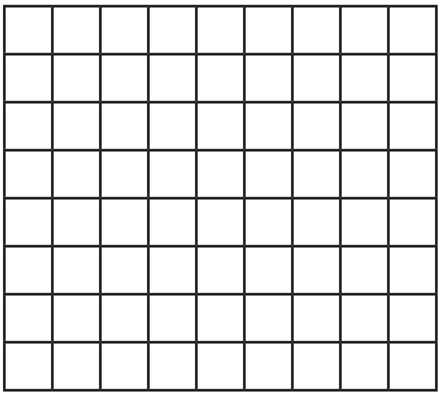


LESSON 39: CONNECT

Directions: Play Mystery Multiplication. Select two number cards, create an array using the two numbers as your factors, write the equation, and then find the product.

LESSON 39: APPLY

Directions: Break apart the arrays and, using the distributive property, write an equation to show your work.

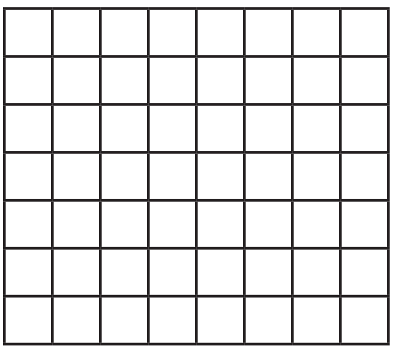
1. 

____ × ____ = ☐

____ × ____ = ☐

☐ + ☐ = ◯

8 × 9 = ____

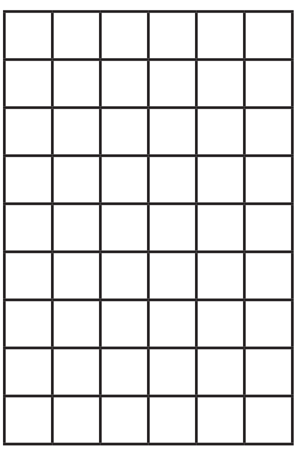
2. 

____ × ____ = ☐

____ × ____ = ☐

☐ + ☐ = ◯

7 × 8 = ____

3. 

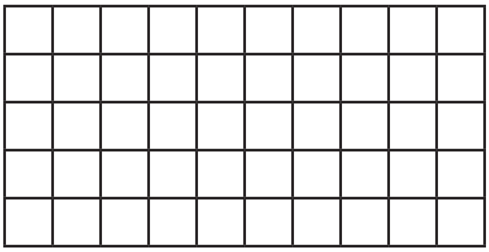
____ × ____ = ☐

____ × ____ = ☐

☐ + ☐ = ◯

9 × 6 = ____

4.



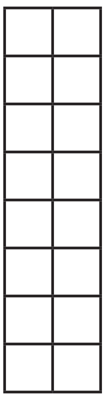
____ × ____ = ☐

____ × ____ = ☐

☐ + ☐ = ○

5 × 10 = ____

5.



____ × ____ = ☐

____ × ____ = ☐

☐ + ☐ = ○

8 × 2 = ____

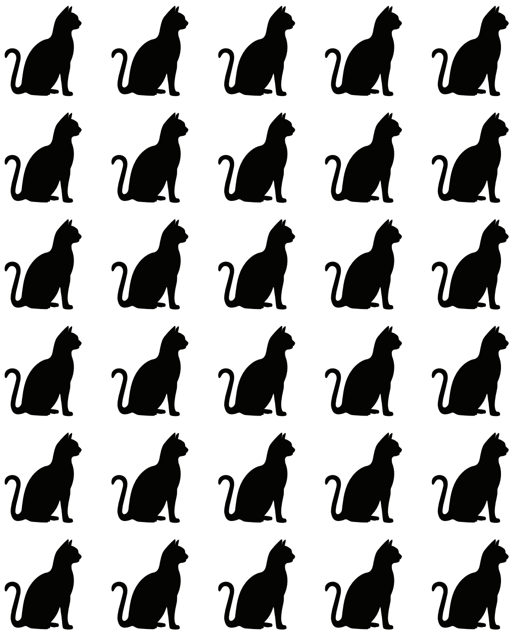
LESSON 39: MATH JOURNAL

Directions: Reflect on your learning in this lesson. Answer the questions in the boxes below.

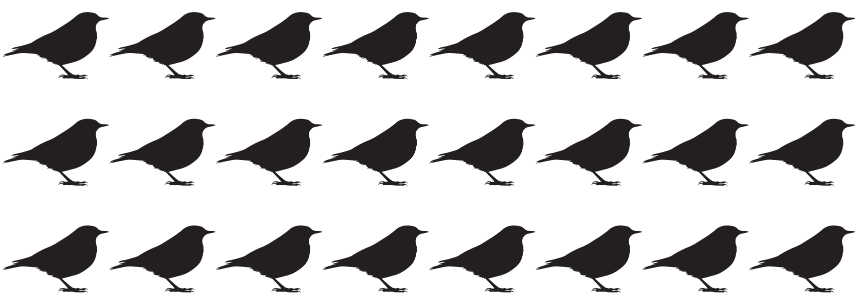
What is the Distributive Property of Multiplication? Explain it in your own words. Use drawings and numbers to explain your thinking.

LESSON 40: APPLY

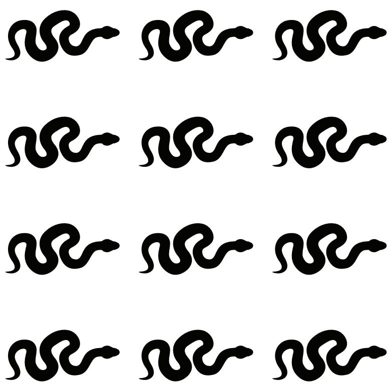
Directions: Break up the following arrays in as many different ways as possible. Use different colors to keep track of your different arrays. Then select the one that is most helpful to you as a mathematician and write the equations that match it in the box.



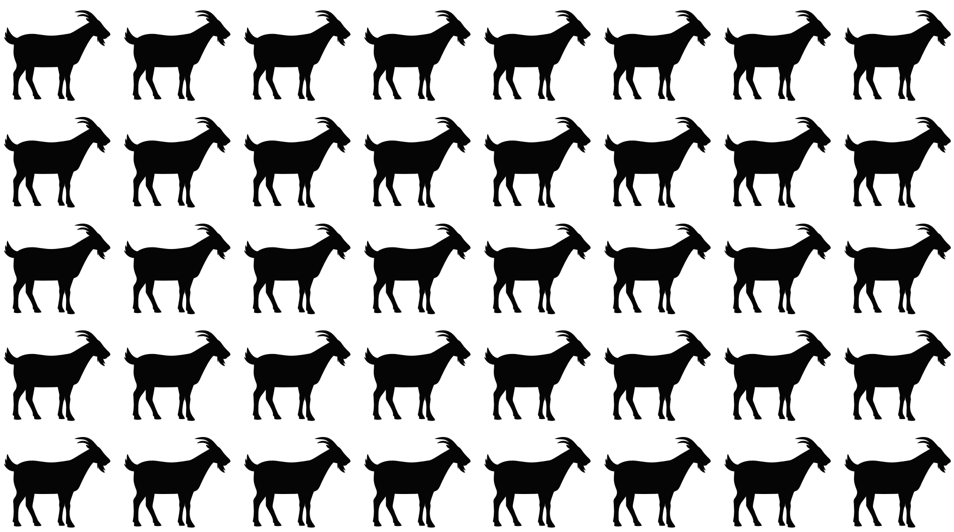
Equations:



Equations:



Equations:



Equations:



Equations:

LESSON 40: MATH JOURNAL

Directions: Reflect on your learning about the Distributive Property. Answer the questions below using words and/or pictures to show your thinking.

Why was it easier to solve some arrays than others?

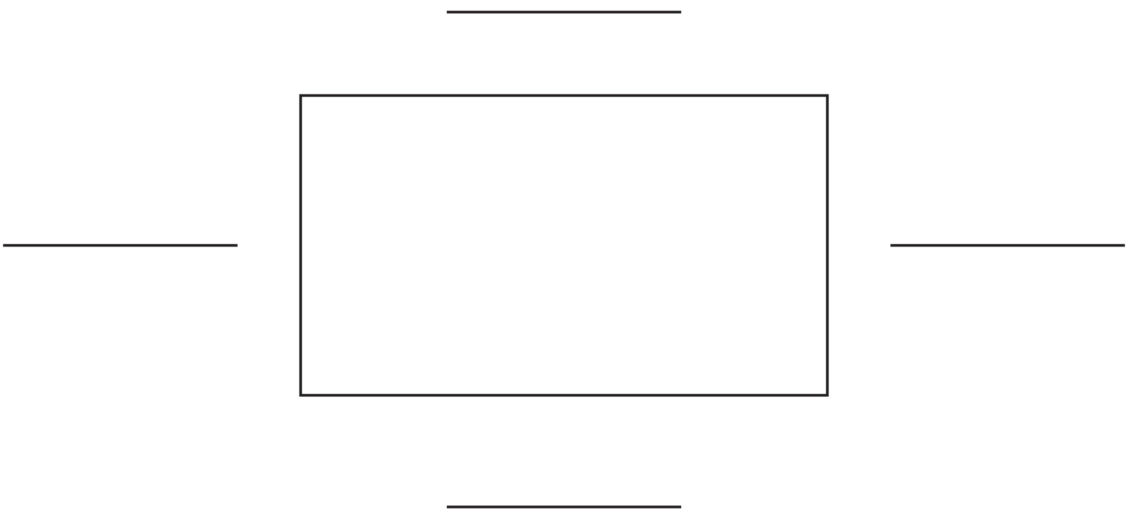
What was your strategy for identifying which new arrays you would solve?

Which multiplication facts do you feel most confident about? Which multiplication facts do you feel least confident about? What will you do to improve your work with the more challenging multiplication facts?

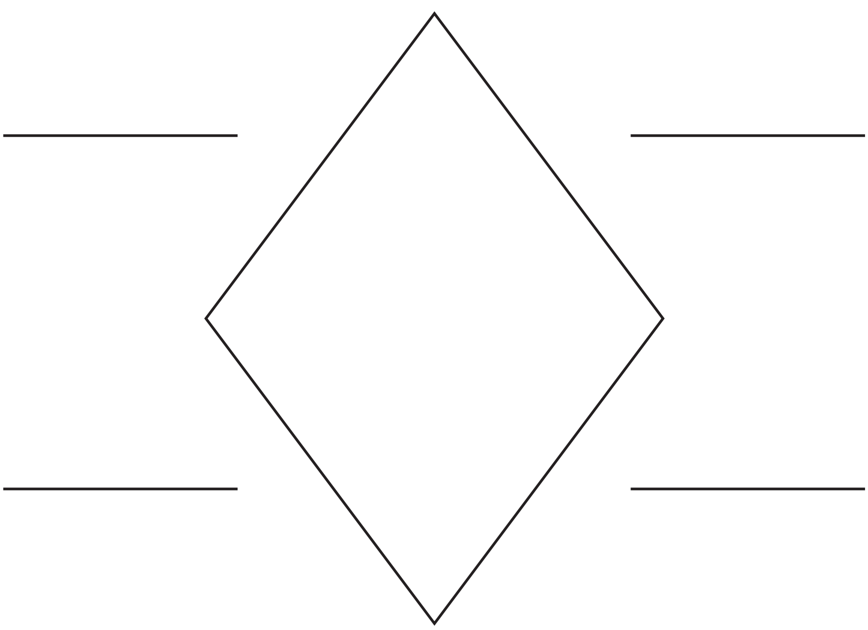
LESSON 41: APPLY

Directions: For each shape below, do the following:

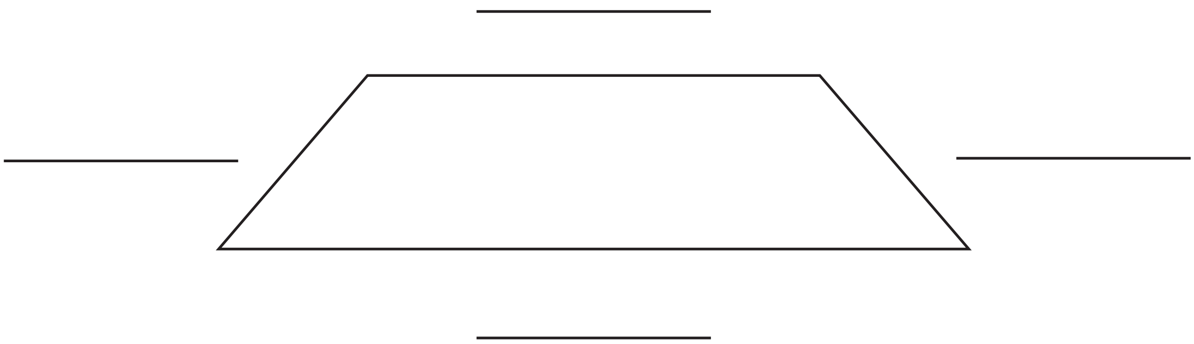
- Measure and record each of the side lengths of the quadrilaterals with your ruler.
- Label the units.



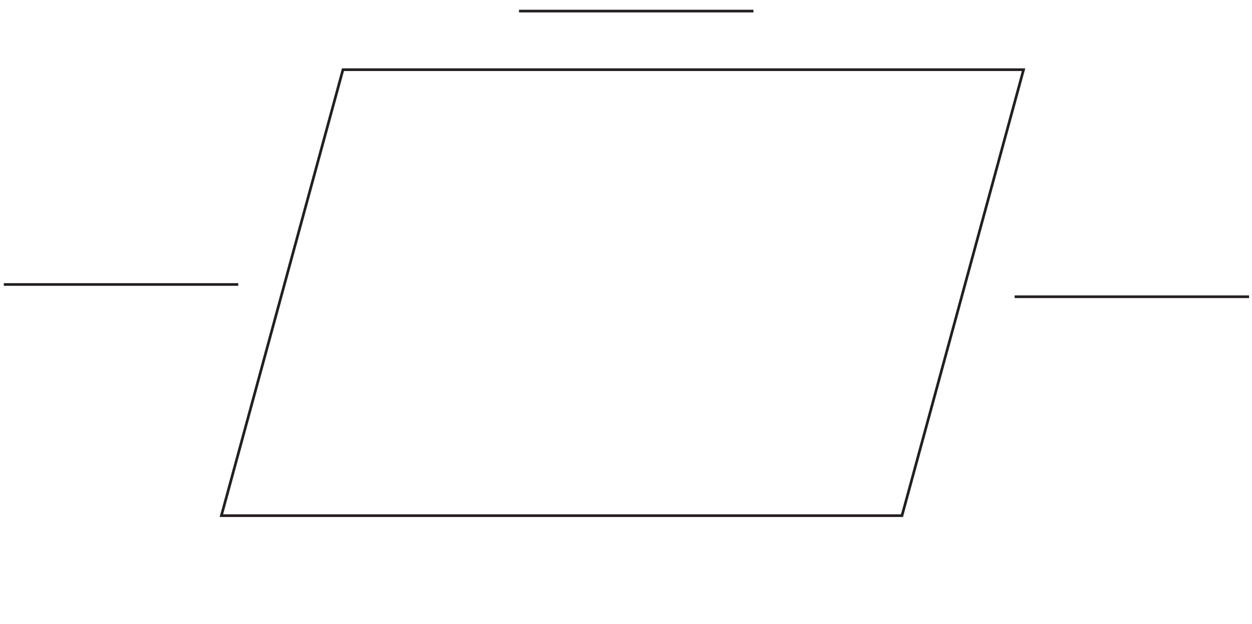
Perimeter: ____________



Perimeter: ____________



Perimeter: ______________



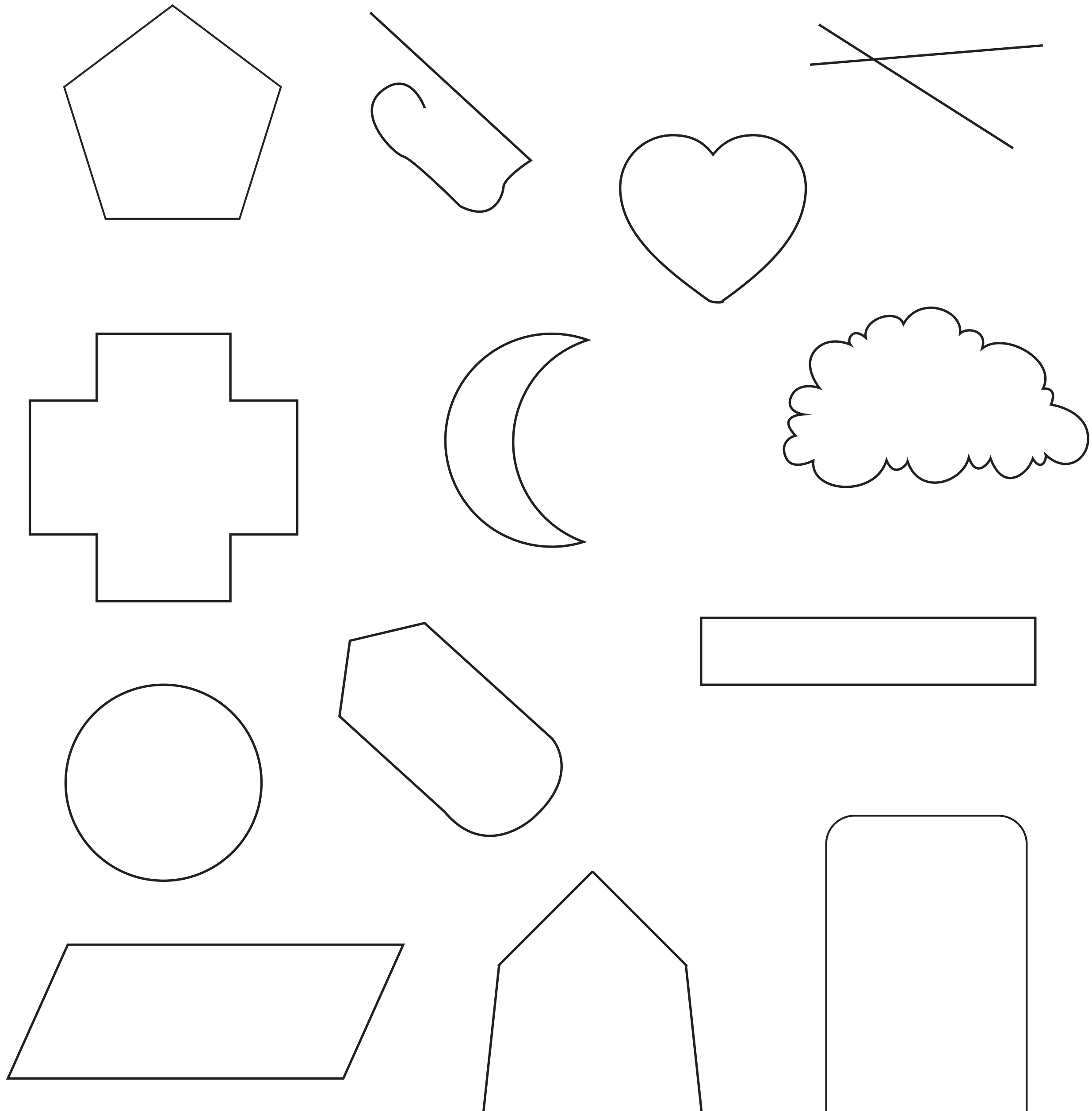
Perimeter: ______________

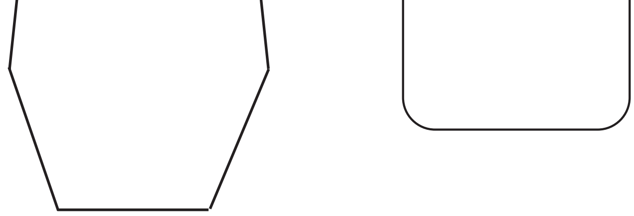
LESSON 41: MATH JOURNAL

Directions: Reflect on your learning about perimeter. Think about how you found the perimeter of the shapes today. Why is perimeter a linear measurement? Write your thoughts in the box below.

LESSON 42: CONNECT

Directions: Look at the shapes below. Circle the shapes that are polygons and cross out the shapes that are NOT polygons.





My definition of POLYGON:

Perimeter: ____________

LESSON 42: APPLY

Directions:

1. Choose two polygons from the Connect page and carefully cut them out.
2. Glue the two shapes below.
3. Write the name of each polygon on the lines below.
4. Measure and record the length of each side of Polygon 1. Be sure to label your measurements.
5. Find the total perimeter of Polygon 1 and record it on the chart on the next page.
6. Repeat steps 4 and 5 for Polygon 2.
7. Find the difference between the perimeters of the two polygons. Show your work.

Polygon 1: ______________________

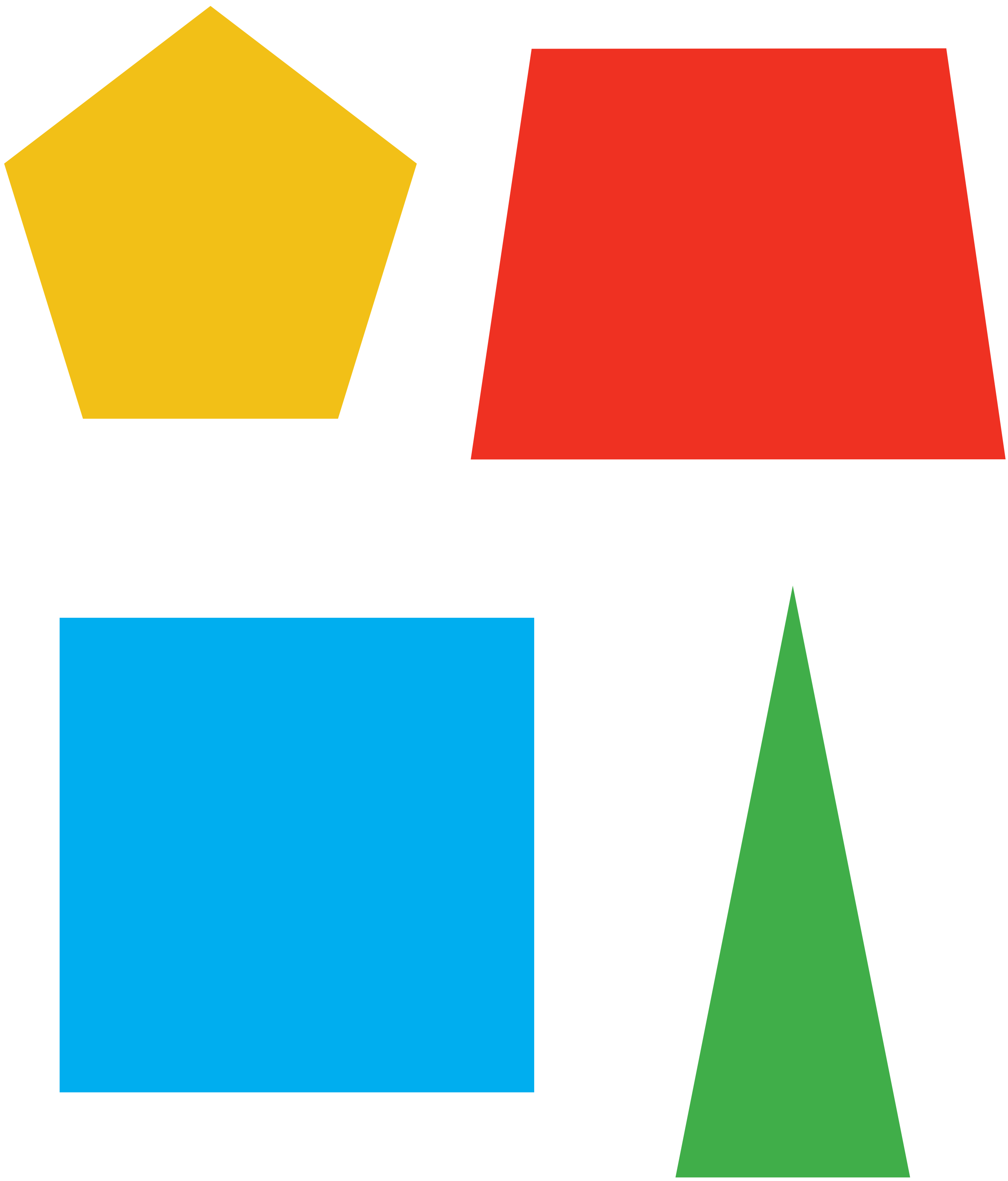
Polygon 2: ______________________

POLYGON	PERIMETER
Polygon 1	
Polygon 2	

What is the difference between the two polygons' perimeters? Show your work.

LESSON 43: APPLY

Directions: Follow the directions below.



Step 1: Look at the pentagon, trapezium, square, and triangle. ESTIMATE the perimeter of each shape. Write your ESTIMATES below.

Pentagon: ______________________________

Trapezium: ______________________________

Square: ______________________________

Triangle: ______________________________

Step 2: Write the names of the shapes in order from smallest ESTIMATED perimeter to greatest ESTIMATED perimeter.

______________ , ______________ , ______________ , ______________

Step 3: Measure the side lengths of each shape and record your measurements in the tables below. Add the sides together to calculate the perimeter of each shape. Record your answers in the tables.

PENTAGON	
SIDES	LENGTH OF SIDE IN CENTIMETERS (CM)
1	
2	
3	
4	
5	
Perimeter	

TRAPEZIUM	
SIDES	LENGTH OF SIDE IN CENTIMETERS (CM)
1	
2	
3	
4	
Perimeter	

SQUARE	
SIDES	LENGTH OF SIDE IN CENTIMETERS (CM)
1	
2	
3	
4	
Perimeter	

TRIANGLE	
SIDES	LENGTH OF SIDE IN CENTIMETERS (CM)
1	
2	
3	
Perimeter	

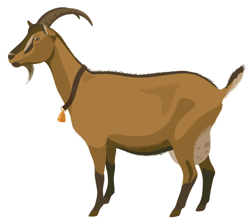
Step 4: Write the names of the shapes in order from smallest ACTUAL perimeter to greatest ACTUAL perimeter.

________________ , ________________ , ________________ , ________________

LESSON 44: APPLY

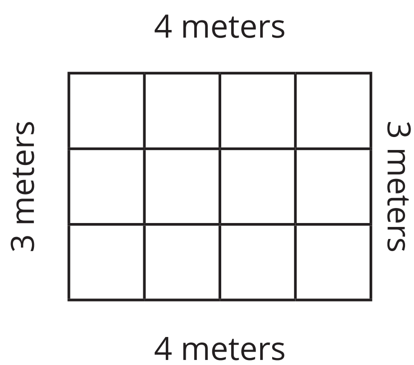
Directions: Work with your Shoulder Partner to solve the perimeter and area problems below. Your teacher will give you additional directions.

Goat Pen

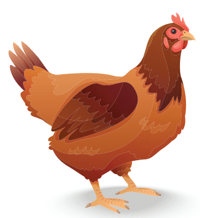


Perimeter = ___________ meters   Area = ___________ square meters

Work Space

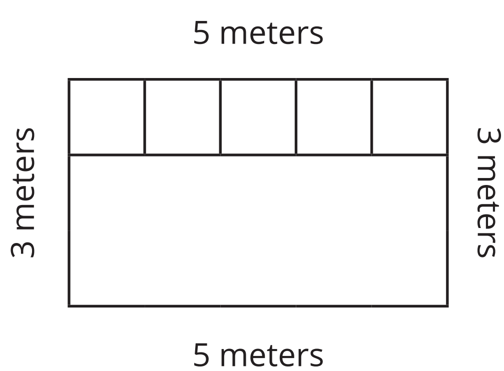


Chicken Pen



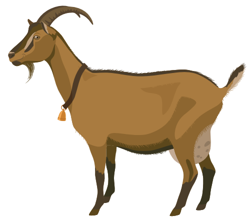
Perimeter = ___________ meters   Area = ___________ square meters

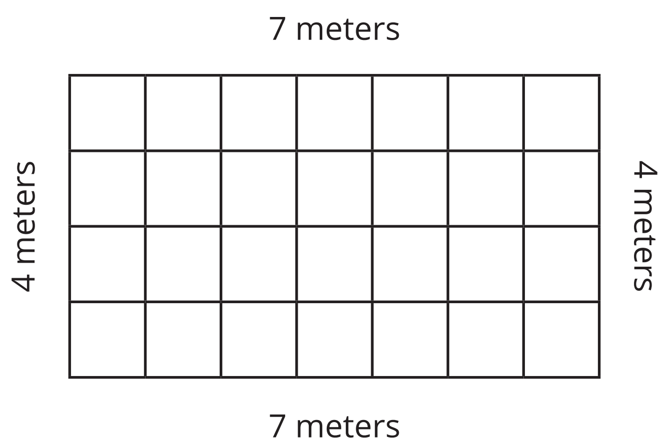
Work Space



More Practice:

A New Goat Pen

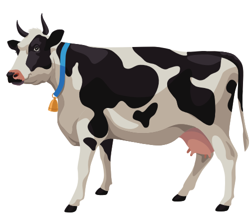




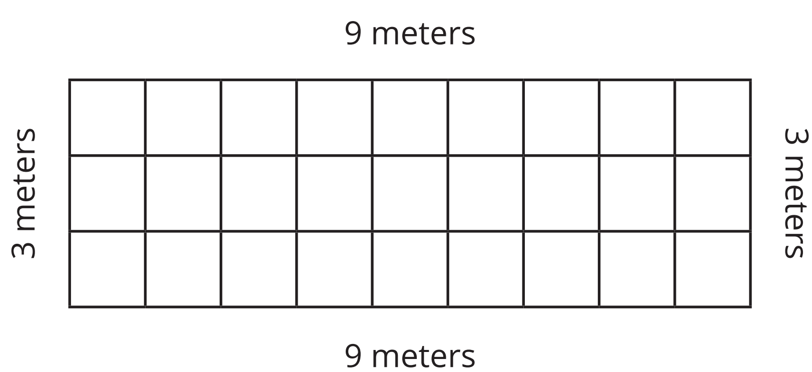
Work Space

Perimeter = ____________ meters Area = ____________ square meters

Cattle Pen

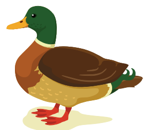


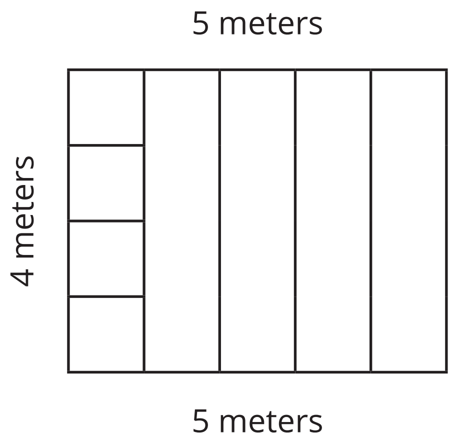
Work Space



Perimeter = ____________ meters Area = ____________ square meters

Duck Pen

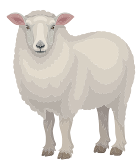




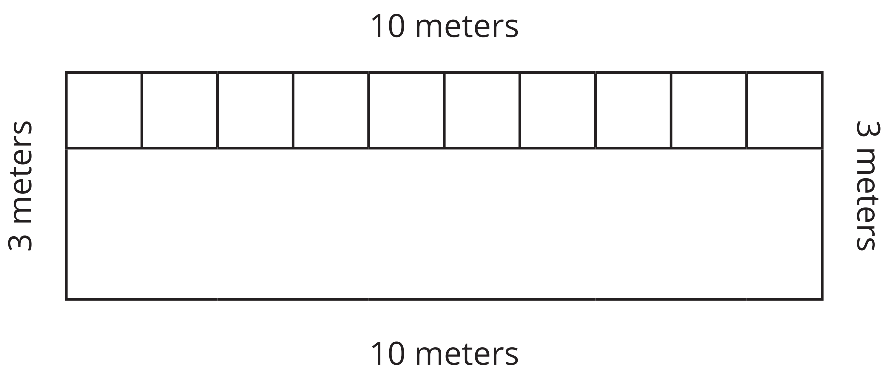
Work Space

Perimeter = ____________ meters   Area = ____________ square meters

Sheep Pen



Work Space



Perimeter = ____________ meters   Area = ____________ square meters

CHALLENGE:

1. How much fencing would you need to make ALL of these pens?

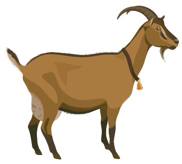
2. How many square meters of space would the animals have if you combined ALL of the pens?

LESSON 44: MATH JOURNAL

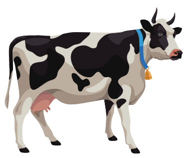
Directions: How would you explain the difference between perimeter and area to a Primary 2 student? Write your explanation in the box below. Use numbers, pictures, and words to explain the difference.

LESSON 45: APPLY

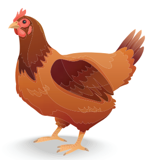
Directions: Look at the space requirements for the animals below. Then determine which pen each animal could use. Write the area of the pen and the name of the animal for each pen. Some pens might work for multiple animals.



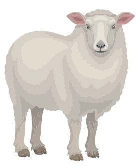
Goat's area > 30 square meters



Cattle's area > 39 square meters



Chicken's area < 20 square meters



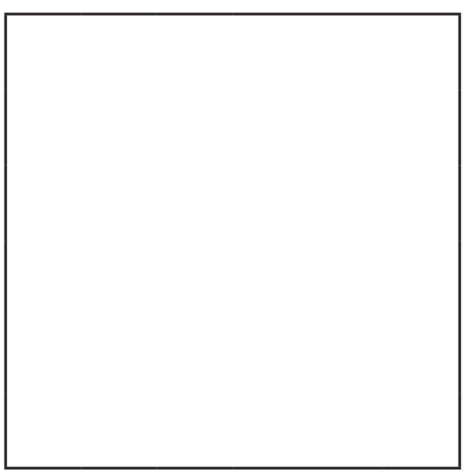
Sheep's area < 30 square meters but > 24 square meters

Animal Pens

Pen #1

6 meters

6 meters



Area = ____________ square meters

Animal that can use: _________________________

Pen #2

6 meters

3 meters

Area = __________ square meters

Animal that can use: ____________________

Pen #3

5 meters

5 meters

Area = __________ square meters

Animal that can use: ____________________

Pen #4

8 meters

5 meters

Area = __________ square meters

Animal that can use: ____________________

Pen #5

7 meters

5 meters

Area = __________ square meters

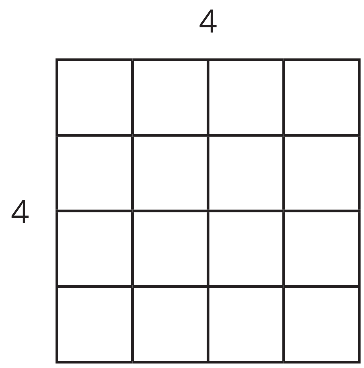
Animal that can use: ____________________

CHALLENGE:

Sketch a different pen for each animal. Be sure to label your pens' dimensions.

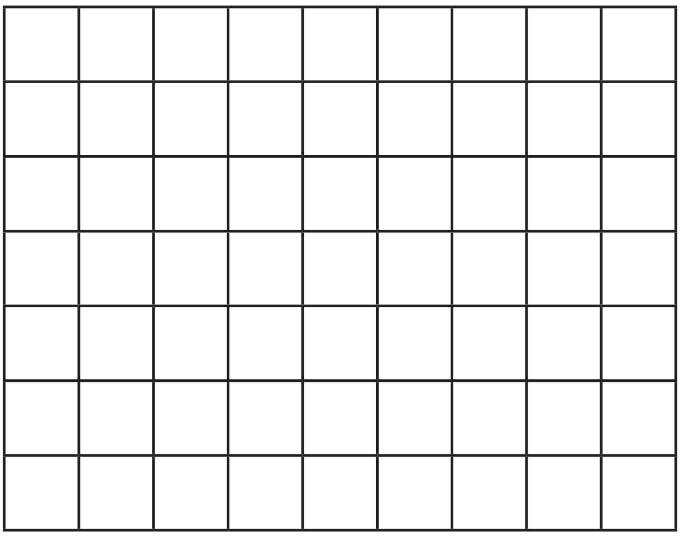
LESSON 46: CONNECT

Directions: A friend said that the area of the square shown below is 8 square units. Do you agree or disagree? Explain your thinking in the box below using words, pictures, and/or numbers.

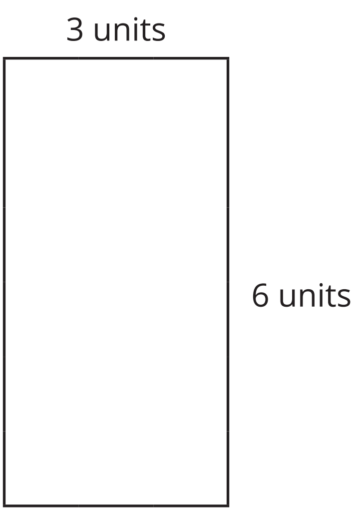


LESSON 46: APPLY

Directions: Choose two of the problems below to demonstrate strategies for finding the area of rectangles. For each problem, show TWO ways to find the area. Explain your thinking using words, pictures, and/or numbers. Remember to label all of your answers.

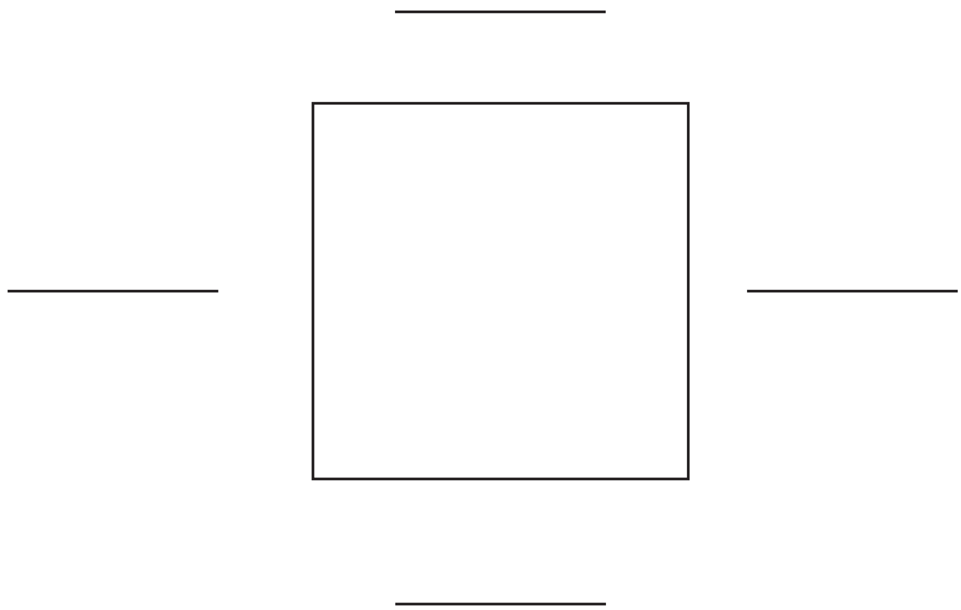
1. 

Show your work here:

2. 

Show your work here:

3. Measure this shape with a ruler and label the dimensions in centimeters.



Show your work here:

LESSON 46: APPLY, continued

In the boxes below, answer the following questions:

1. Which strategy for finding area works best for you? Why?

2. Which strategy for finding area is the most challenging for you right now? Why?

LESSON 47: CONNECT

Directions: Use counters to solve the division problems below. For each problem, draw a picture to show your solution.

1. 36 ÷ 6 =

2. 21 ÷ 3 =

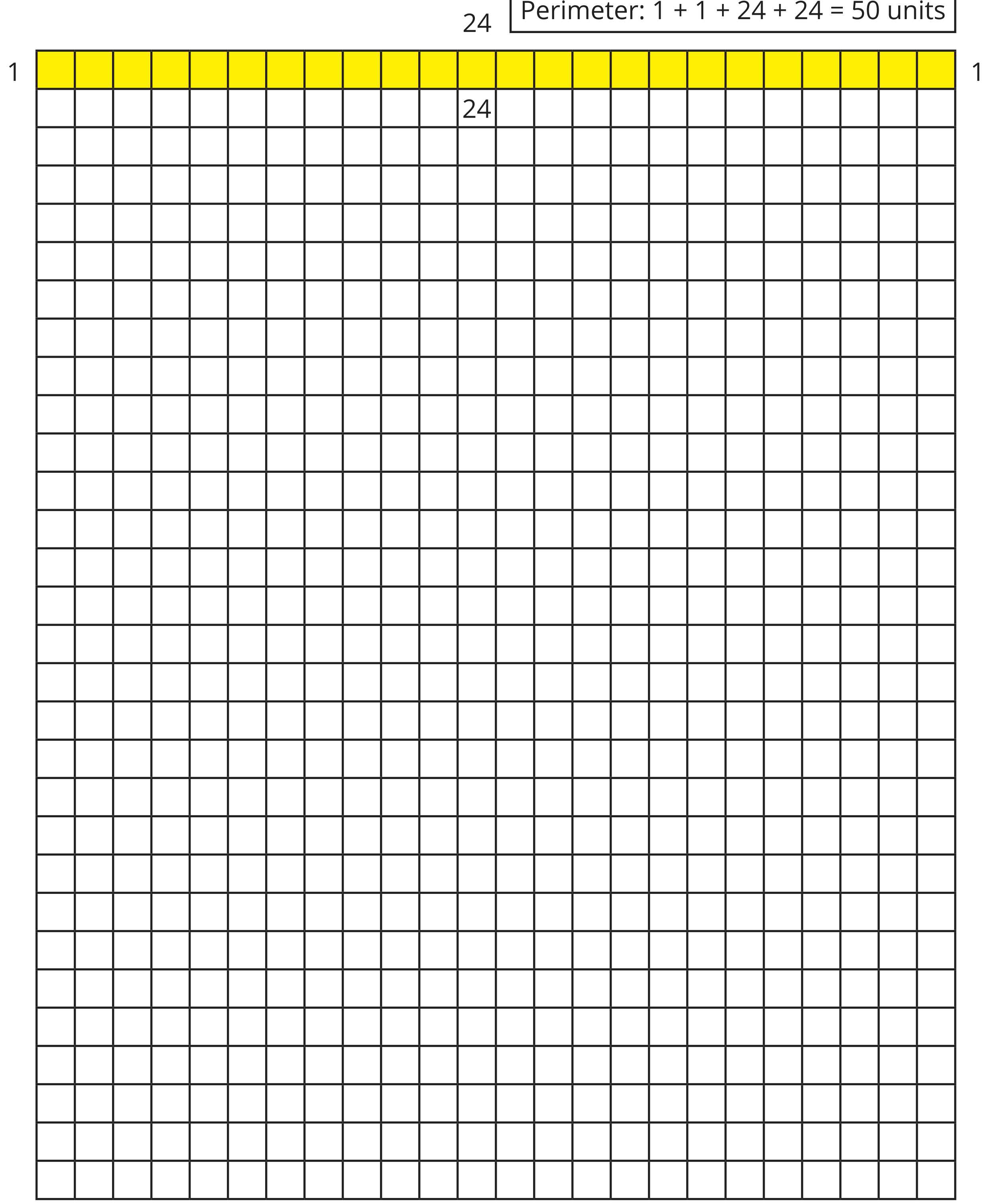
3. 48 ÷ 12 =

LESSON 47: APPLY

Walid invited his friends over to play board games. He has 24 small square tables that he wants to arrange to make a larger rectangular table.

Part 1 Directions: In the grid below, draw as many rectangular tables as you can. Label the width and length and then write an equation to find the area and another equation to find the perimeter. One rectangular table is done for you.

Area: 24 × 1 = 24 square units
Perimeter: 1 + 1 + 24 + 24 = 50 units



Part 2 Directions: In the table below, record the dimensions, perimeter, and area of each of the rectangular tables you built.

Width (linear units)	1								
Length (linear units)	24								
Perimeter (linear units)	50								
Area (square units)	24								

CHALLENGE:

Directions: Which seating arrangement would be the best for playing games with friends? Why do you think so? Write your response in the box below. Use pictures, numbers, and/or words.

LESSON 48: CONNECT

Do two rectangles with the same area always have the same perimeter?

Directions: Complete the following steps.

1. Use your ruler to draw two different rectangles with an area of 6 square cm.
2. Label the side lengths of each rectangle.
3. Calculate the perimeter of each rectangle.
4. Compare the two perimeters and explain your observations using words and/or numbers.

LESSON 48: APPLY

Directions: Complete the following steps.

1. In the space below, use your ruler to draw two different rectangles with a perimeter of 20 cm.
2. Label the side lengths of each rectangle.
3. Calculate the area of each rectangle.
4. Compare the two areas and explain your observations using words and/or numbers.

CHALLENGE:

Can you draw a different type of polygon with a perimeter of 20 cm? (You do not have to find the area.) Use your ruler to draw as many as you can below.

LESSON 48: MATH JOURNAL

Directions: Reflect on your learning about area and perimeter. In the box below, explain the strategy you used to solve today's Apply problem. You may use words, numbers, and/or pictures.

LESSON 49: CONNECT

Directions: Use counters to solve the division problems below. For each problem draw a picture to show your solution.

1. 27 ÷ 3 =

2. 44 ÷ 11 =

3. 36 ÷ 9 =

LESSON 49: APPLY

Part 1 Directions: Solve the story problems below. Include a drawing and an equation for each problem. Be sure to label your answers.

1. Shaimaa is sewing a border on a square baby blanket. The length of the blanket is 45 centimeters and the width is 45 centimeters. How long will the border be?

2. Farouk is building a patio out of tiles. He wants the length of the patio to be 7 tiles across and its width to be 6 tiles. How many tiles will he use in all to build the patio?

3. Omnia wants to put a wooden trim around her window. The window is 4 meters tall and 1 meter wide. How much wood does she need for the trim?

4. A farmer is building a fence around his garden. If the garden is 8 meters long and 3 meters wide, how much fencing does he need to buy?

5. A rug is 3 meters long and 2 meters wide. What is the area of the rug?

Part 2 Directions: Write your own story problems. Write one perimeter story problem and one area story problem.

My Perimeter Story Problem

My Area Story Problem

LESSON 50: APPLY

Directions: Draw lines to represent the groups of 10 to help you solve the following problems.

3 × 70 =

8 × 40 =

6 × 90 =

10 × 10 =

8 × 20 =

7 × 40 =

$3 \times 50 =$

$4 \times 40 =$

CHALLENGE:

Think about the patterns you observed when solving the Apply problems. How can you use what you know to help you multiply 18×10? Explain your thinking in words, pictures, or numbers.

LESSON 50: MATH JOURNAL

Directions: Answer the question below. Show your work in the box.

Based on what you know about multiples of 10, what would you predict would happen when you multiply a number by a multiple of 100, such as 2 × 300, or 4 × 500?

LESSON 51: CONNECT

Directions: There is a large auditorium with 8 rows of seating. Each row has 50 chairs. Omar thinks there are 450 chairs total. Is he correct? Use words, pictures, and/or numbers to explain your thinking.

LESSON 51: APPLY

Directions: Solve the problems below. Split the multiples of 10 into 10 and the other factor. For example, 40 has the factors 10 and 4.

Example:

8 × 40

(8 × 4) × 10 = 320

3 × 90 (____ × ____) × 10 =	**4 × 80** (____ × ____) × 10 =
9 × 20 (____ × ____) × 10 =	**6 × 30** (____ × ____) × 10 =
8 × 50 (____ × ____) × 10 =	**7 × 30** (____ × ____) × 10 =
6 × 70 (____ × ____) × 10 =	**5 × 40** (____ × ____) × 10 =

CHALLENGE: Malek bought a box of cards. In the box there were 6 smaller boxes, and in each of those boxes there were 6 packs of 10 cards. To find the total number of cards he bought, Malek wrote this equation: 6 × 60 = 360. Is he correct? Explain how you know.

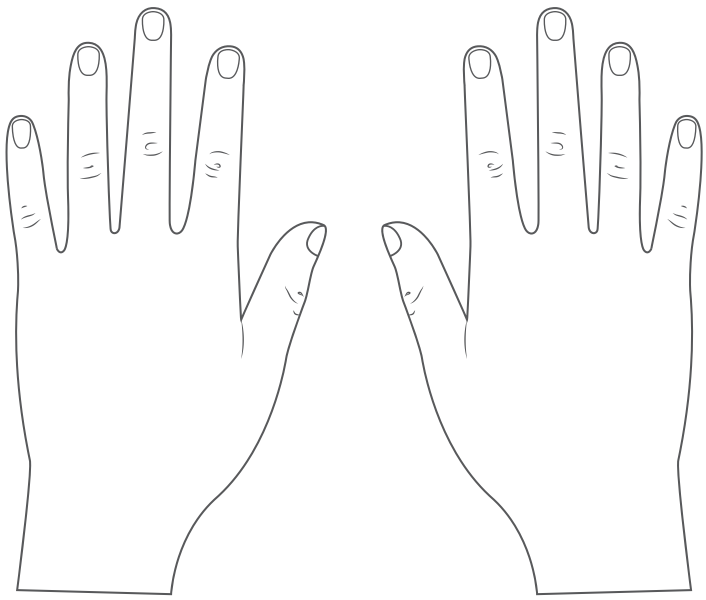
LESSON 51: MATH JOURNAL

Directions: Reflect on your learning about multiplying by multiples of 10. In the space provided, explain the patterns you observed when multiplying a single digit by multiples of 10. Use words, pictures, and/or numbers to explain your thinking.

LESSON 52: APPLY

Group 1: Finger Trick Strategy

After you practice the strategy, draw an example below and use words to explain how to do it.



CHALLENGE: Why do you think this strategy works?

LESSON 52: APPLY

Group 2: List of Equations Strategy

Directions: List the equations for multiplying by 9 in order. The first two have been done for you. Then record below the table what you notice about any patterns.

9 × 1 =	9
9 × 2 =	18
9 × 3 =	

Describe the patterns you observe. Be sure to look at the factors and the products.

CHALLENGE: What additional pattern do you observe when you add the Tens digit and Ones digit of each product (for example, 0 + 9 and 1 + 8)?

LESSON 52: APPLY

Group 3: 120 Chart Strategy

Directions: Shade in all the multiples of 9. Next to the chart, record what patterns you notice.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Describe the patterns you observe.

CHALLENGE: Record all the multiplication equations below. See if you can find products beyond those you colored in the 120 Chart.

LESSON 52: APPLY

Group 4: Tens Facts Strategy

Directions: You can use what you know about multiplying by 10 to quickly multiply by 9. Look at the example below. Solve and discuss each problem with your group.

9 × 6

First draw a model of 10 × 6 and then cross out one group of 6. Now there are 9 groups of 6.

6	6	6	6	6	6	6	6	6	~~6~~

10 × 6 = 60

60 – 6 = ______ so 9 × 6 = ______

9 × 5

10 × 5 = ______ so 9 × 5 = ______

9 × 7

10 × 7 = ______ so 9 × 7 = ______

9 × 3

10 × 3 = ______ So 9 × 3 = ______

9 × 2

10 × 2 = ______ so 9 × 2 = ______

9 × 8

10 × 8 = ______ so 9 × 8 = ______

9 × 9

10 × 9 = ______ So 9 × 9 = ______

CHALLENGE: A student told me that 9 × 8 = 70. They said they know that 10 × 8 = 80, so 9 × 8 = 70 because they subtracted a 10 from 80. Are they correct? Show your thinking in the box below.

LESSON 53: CONNECT

Directions: When your teacher gives the signal, solve as many problems as you can in 2 minutes. Use any strategy you learned in Lesson 52.

9 × 2 = ______	4 × 9 = ______	9 × 1 = ______
9 × 0 = ______	9 × 10 = ______	9 × 2 = ______
3 × 9 = ______	9 × 5 = ______	9 × 0 = ______
9 × 7 = ______	9 × 9 = ______	8 × 9 = ______
1 × 9 = ______	9 × 0 = ______	6 × 9 = ______
9 × 4 = ______	9 × 2 = ______	9 × 10 = ______
9 × 5 = ______	9 × 8 = ______	2 × 9 = ______
9 × 6 = ______	1 × 9 = ______	9 × 3 = ______
9 × 8 = ______	9 × 6 = ______	4 × 9 = ______
10 × 9 = ______	9 × 7 = ______	9 × 0 = ______

Number correctly answered: ______________

Number incorrectly answered: ______________

Number not answered: ______________

Put a check mark next to the strategy you used most today.

- ☐ Finger Trick Strategy
- ☐ List of Equations Strategy
- ☐ 120 Chart Strategy
- ☐ Tens Facts Strategy
- ☐ Other

Do you think that strategy worked well for you? Why or why not?

LESSON 53: APPLY

7 × 2 = ______	3 × 9 = ______	10 + 1 = ______
6 × 0 = ______	4 × 3 = ______	2 × 3 = ______
3 + 9 = ______	6 + 5 = ______	0 + 10 = ______
1 × 7 = ______	9 + 9 = ______	8 × 0 = ______
1 + 9 = ______	9 × 9 = ______	6 + 5 = ______
2 × 4 = ______	4 × 2 = ______	3 + 10 = ______
9 × 6 = ______	6 + 6 = ______	2 × 6 = ______
3 + 9 = ______	3 + 3 = ______	7 + 3 = ______
10 × 8 = ______	2 × 10 = ______	0 + 4 = ______
3 + 9 = ______	9 + 10 = ______	6 × 0 = ______
4 × 8 = ______	2 × 10 = ______	0 + 4 = ______
1 × 1 = ______	6 + 1 = ______	8 × 8 = ______
3 × 3 = ______	5 × 10 = ______	5 + 5 = ______
6 × 1 = ______	9 × 6 = ______	9 × 0 = ______
10 × 0 = ______	5 × 10 = ______	6 + 2 = ______
2 + 9 = ______	0 + 10 = ______	1 × 2 = ______
5 × 8 = ______	2 × 3 = ______	4 + 4 = ______
8 + 9 = ______	9 + 6 = ______	6 × 7 = ______
0 × 8 = ______	9 × 10 = ______	10 + 4 = ______
2 × 5 = ______	1 + 10 = ______	4 × 2 = ______

Problems completed: ____________

Directions: Record the strategies you used today. If you did not have a strategy for one of the boxes, leave it blank.

ADDITION STRATEGIES	MULTIPLICATION STRATEGIES
+ 0	× 0
+ 1	× 1
+ 2	× 2
+ 3	× 3
+ 4	× 4
+ 5	× 5
+ 6	× 6
+ 7	× 7
+ 8	× 8
+ 9	× 9
+ 10	× 10

What other strategies did you use?

LESSON 54: APPLY

Directions: Solve the problem below with your partner.

Gamila said that since 9 is the digit with the largest value, the number 999 is larger than 1000. Do you agree or disagree? Why?

Directions: Solve the rest of these problems independently.

Puzzle 1:

This number has 5 Thousands, 7 Hundreds, 6 Tens, and 4 Ones. What number is it?

____

Puzzle 2:

This number has 12 Hundreds, 15 Tens, and 6 ones. What number is it?

____

Puzzle 3:

Write the following number in standard form. Pay attention to the place value.

6,000 + 50,000 + 40 + 300 + 2 =

____

Puzzle 4:

Write the following number in expanded form.

3,509 = ____

Puzzle 5:

Radwa ordered the following numbers from smallest to largest. What did she do incorrectly?

5,021   5,201   5,102   5,210

Reorder the numbers correctly: ________ , ________ , ________ , ________

Puzzle 6:

Sara compared the numbers below. What is her error?

13,470 < 13,407

____

Puzzle 7:

Order the following numbers from least to greatest: 50; 5; 500; 5,000; 1; 10,000; 500,000.

________ , ________ , ________ , ________ , ________ , ________ , ________

CHALLENGE:

Write at least one place value puzzle of your own for a number that has at least 4 Ten Thousands.

LESSON 55: APPLY

Directions: Solve the addition problems below using a strategy that is efficient for you. When finished, choose two problems and double-check your answer using a different addition strategy. Rewrite the two problems in the rows at the bottom and show your work for the new strategy.

PROBLEM	WORK SPACE	SUM
97 + 184		
483 + 201		
823 + 262		
677 + 233		
865 + 337		

DOUBLE-CHECKING USING A NEW STRATEGY		
PROBLEM	WORK SPACE	SUM

CHALLENGE:

1. Choose one of the problems from above and write a story problem using those numbers.
2. Choose four of the sums and find the sum of those four numbers.

LESSON 55: MATH JOURNAL

Directions: Reflect on your learning about addition strategies. Why is it important to learn different strategies to solve addition problems? Write your thinking below and use examples to support your answer.

LESSON 56: CONNECT

Agree or Disagree?

The librarian kept track of how many books were borrowed from the library during the month of September. The chart below shows the data she collected. She told the principal that two grade levels combined borrowed about 600 books.

Amir estimated it was Grades P3 and P5. You disagreed and said it was two other grade levels. What grade levels do you estimate read about 600 books? Explain in the space below the chart.

GRADE LEVEL	BOOKS BORROWED
P1	435
P2	308
P3	288
P4	201
P5	247

LESSON 56: APPLY

Directions: Solve the following problems using a strategy that works well for you and your partner. Show all your work and thinking in the boxes below the questions. Remember to label your answers. When finished, place a star next to the most challenging problem.

Data Table 1: The table below shows the number of students in each grade level in a large school in Cairo. Use this information to answer the questions below.

GRADE	NUMBER OF STUDENTS
P1	272
P2	356
P3	529
P4	487

Questions:

How many students are P1 and P4 all together?

How many students are in P3 and P4 all together?

Fareed says there are more students in P1 and P3 then there are in P2 and P4. Do you agree or disagree? Prove your answer.

Data Table 2: The following table shows the length of some of the world's longest rivers. Use the information to answer the questions below.

RIVER	APPROXIMATE LENGTH IN KILOMETERS*
Nile	About 6,650 km
Amazon	About 6,400 km
Mississippi	About 3,775 km
Euphrates	About 2,800 km

*Source: Encyclopedia Britannica

Questions:

If you laid the Mississippi and the Amazon out in one straight line, about how many kilometers would it cover?

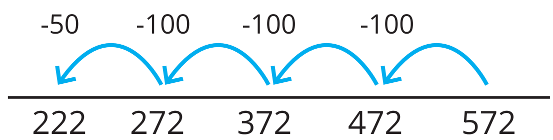
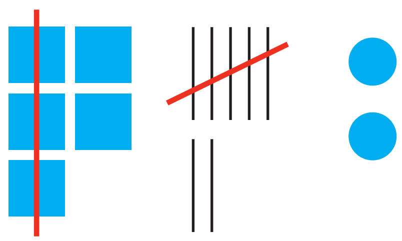
If you were to paddle the entire length of the Euphrates and the Nile, about how many kilometers would you paddle?

If you were to build a path along the entire length of the Mississippi and the Euphrates, about how long would the path be?

CHALLENGE: Use the world's rivers chart to determine about how many kilometers you would travel if you decided to raft the length of all four rivers.

LESSON 57: APPLY

Directions: Solve each subtraction problem using any strategy you choose. Then write an addition problem to check your answer. The first one is an example.

SUBTRACTION PROBLEM	ADDITION PROBLEM TO CHECK
Example: 572 – 350 = 222 Work: *Number Line*  *Place Value Picture* 	Example: 222 + 350 = 572 200 + 300 = 500 22 + 50 = 72 500 + 72 = 572
1. 780 – 450 = Work:	
2. 925 – 610 = Work:	

SUBTRACTION PROBLEM	ADDITION PROBLEM TO CHECK
3. 2,550 – 1,225 = Work:	
4. 3,000 – 1,500 = Work:	
5. 5,548 – 3,315 = Work:	
6. 1,759 – 1,255 = Work:	

CHALLENGE:

1. Pick one of the problems from above and write a story problem using those numbers.

2. Pick the largest difference from above and subtract the smallest difference.

LESSON 58: CONNECT

Mr. Mahmoud raises chickens. In the past two years, his chickens have laid 5,350 eggs. Last year his chickens laid 2,120 eggs. How many eggs did his chickens lay two years ago?

Circle the equation that represents how you might solve. Would you use addition or subtraction?

2,120 + __________ = 5,350

2,120 + 3,000 = 5,120

5,120 + 200 = 5,320

5,320 + 30 = 5,350

3,230 eggs

OR

5,350 – 2,120 = __________

5,350 – 2,000= 3,350

3,350 – 100 = 3,250

3,250 – 20 = 3,230

3,230 eggs

LESSON 58: APPLY

Directions: Read each story problem and decide on a strategy to solve it. Show your work in the box below each problem. Some of the problems might have more than one step. Read carefully.

Example:

Mr. Mahmoud also raises sheep. One day he took 235 sheep out to graze on a hill. Later, his neighbor brought his sheep to the hillside to graze. Now there are 680 sheep on the hill. How many sheep did the neighbor bring to the hillside?

Practice:

1. The library can hold 2,475 books, but 525 books are out on loan and 137 books are missing. How many books are there in the library right now?

2. Three boxes filled with books were just delivered to the library. If each box is filled with 215 books, how many books were delivered?

3. The librarian takes some of the new books out of the boxes. Now there are only 510 books in the boxes. How many books did the librarian take out of the boxes?

4. Amir's family is saving to buy a new TV. The TV costs 4,590 LE on sale. They have saved 2,410 LE so far. How much more money do they need before they can buy the TV?

5. Omar just moved to the city. He found an apartment to rent for 3,340 LE per month. Electricity and gas will cost him 692 LE per month. How much money will it cost him each month to live?

6. If Omar had 5,000 LE to spend each month, how much money does he have left after he pays for rent, electricity and gas?

LESSON 58: MATH JOURNAL

Directions: Reflect on your learning about addition and subtraction strategies and adding and subtracting large numbers. Circle the number that best describes your level of confidence solving addition and subtraction problems with large numbers at this point in the year.

1 = Adding and subtracting large numbers is still tricky for me.

5 = I am very confident solving large-number addition and subtraction problems.

1	2	3	4	5

In the box below, describe why you circled the number you did. Explain how you are feeling about these concepts. Identify what you are doing well and where you think you might still need help.

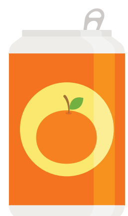
LESSON 59: APPLY

Directions: Cut out the pictures below and then sort them according to whether the liquid volume is best measured in milliliters or liters. When you and your Shoulder Partner are finished, compare your answers. Discuss any areas of disagreement.

Petrol in a car



Soda in a can



Spoonful of medicine



Dishwashing soap



Water in a bottle



Shampoo in a bottle



Juice in a juice box



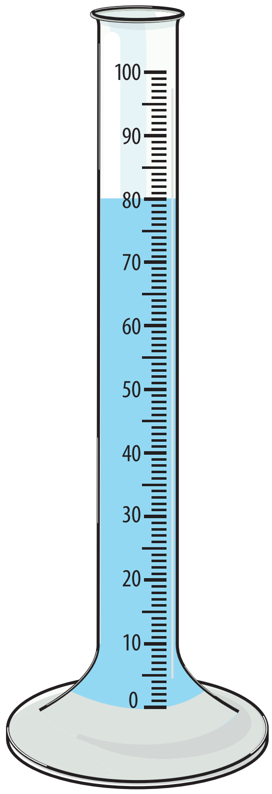
Water in the bathtub



MILLILITERS	LITERS

LESSON 60: CONNECT

Directions: The picture below represents a graduated cylinder. Write your observations in the table below. Share what you notice, what the graduated cylinder reminds you of, and what you wonder.



WHAT I NOTICE	WHAT IT REMINDS ME OF	WHAT I WONDER

LESSON 60: APPLY

Directions: Read aloud the volume measurement (or measurements) on each container. Then write the name of the container (for example, large shampoo bottle), draw a picture of it, and write its volume in the table below. Be sure to record the unit label for each measurement.

CONTAINER	PICTURE	VOLUME

CONTAINER	PICTURE	VOLUME

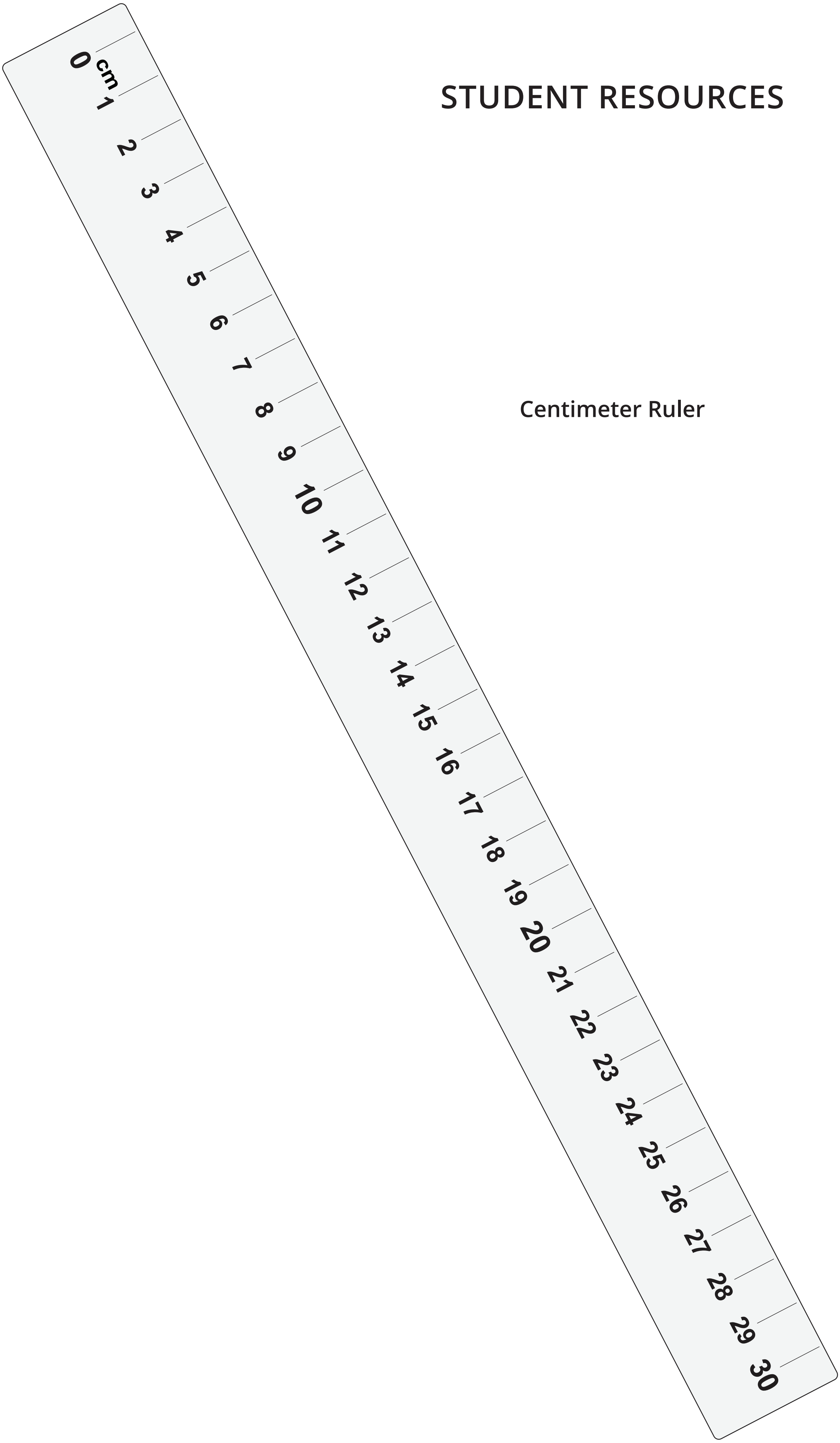
LESSON 60: MATH JOURNAL

Directions: Reflect on your learning about volume. Imagine you were going to teach a Primary 2 friend everything you know about volume.

In the box below, write what you know about volume: what it is, how to find it, the units we use, how the units compare to each other, containers that use volume measurements, and so on. Use words, pictures, and/or numbers to share your thinking.

Student Resources

STUDENT RESOURCES

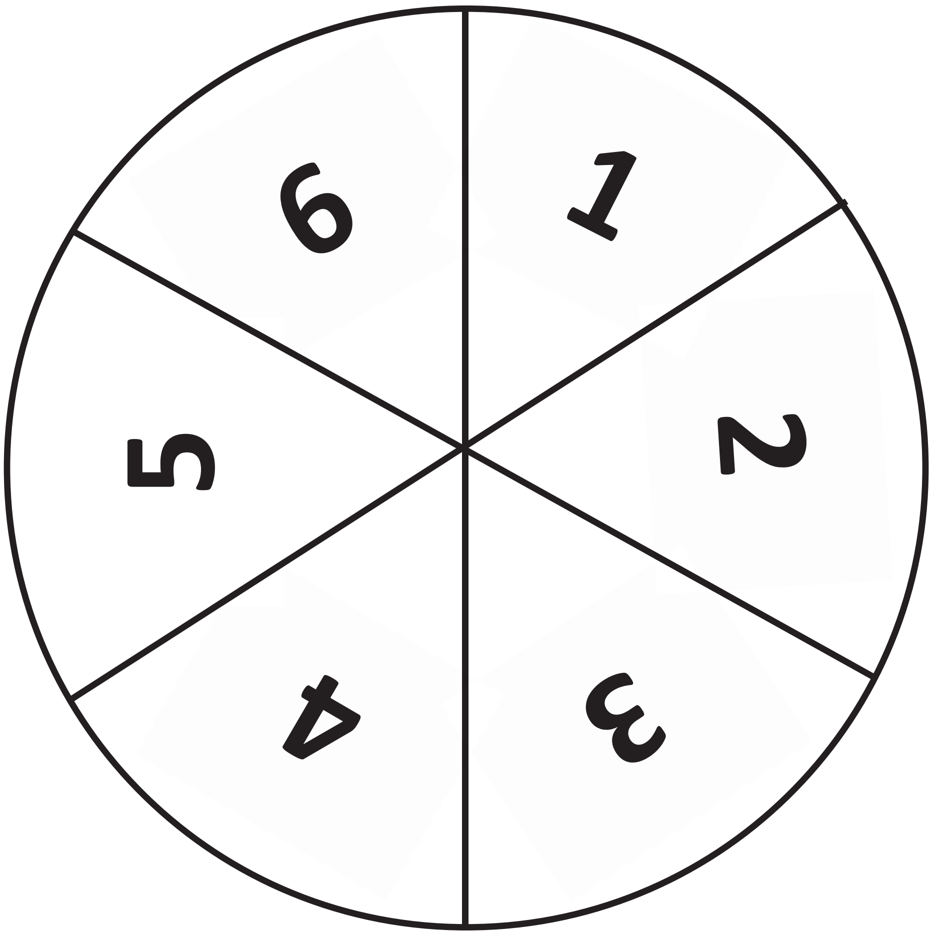


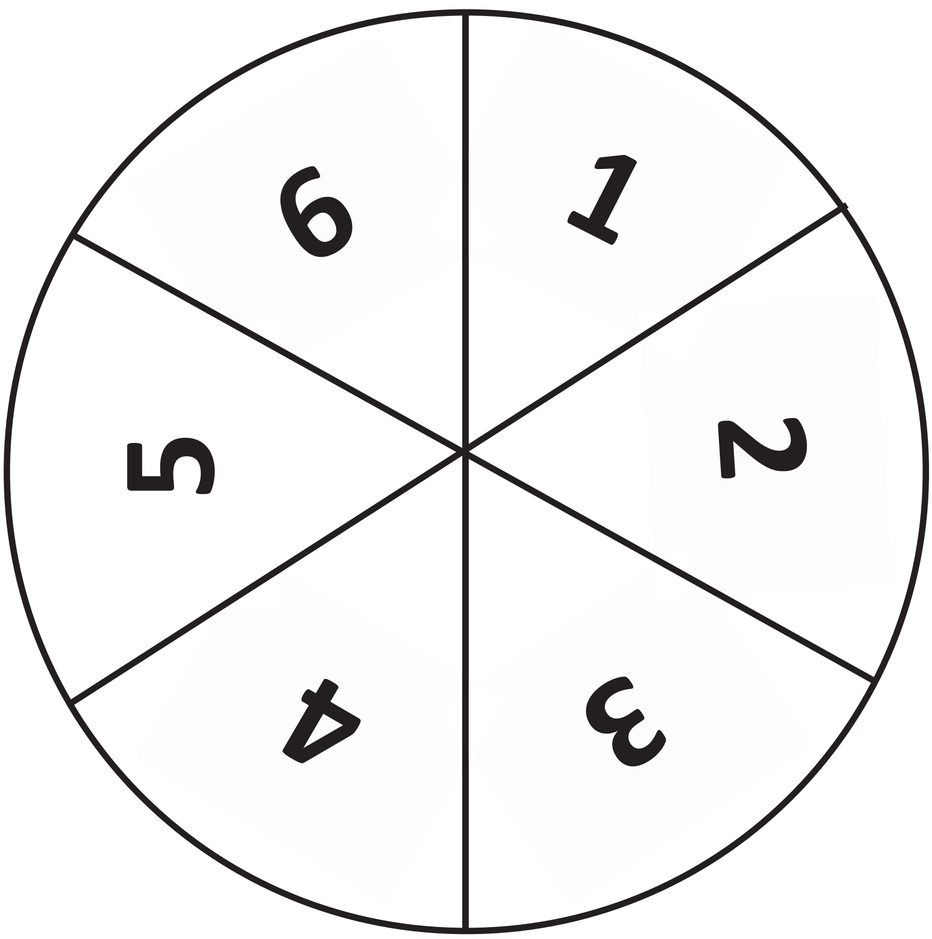
Centimeter Ruler

Centimeter and Millimeter Ruler

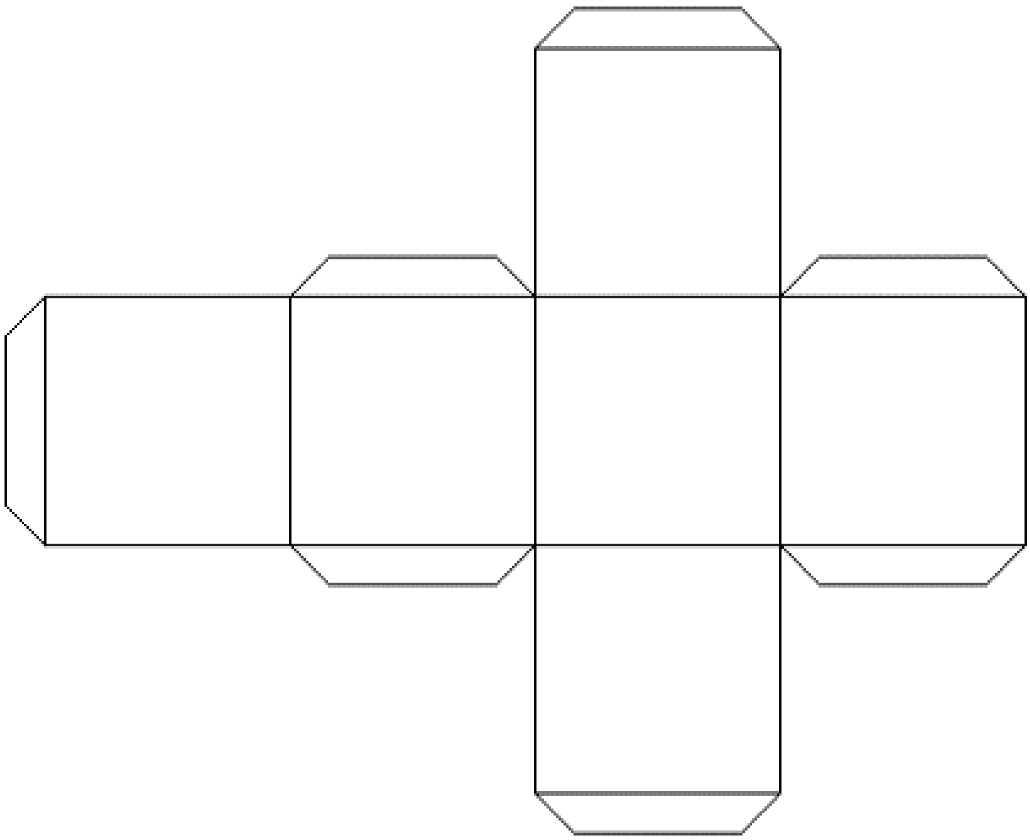


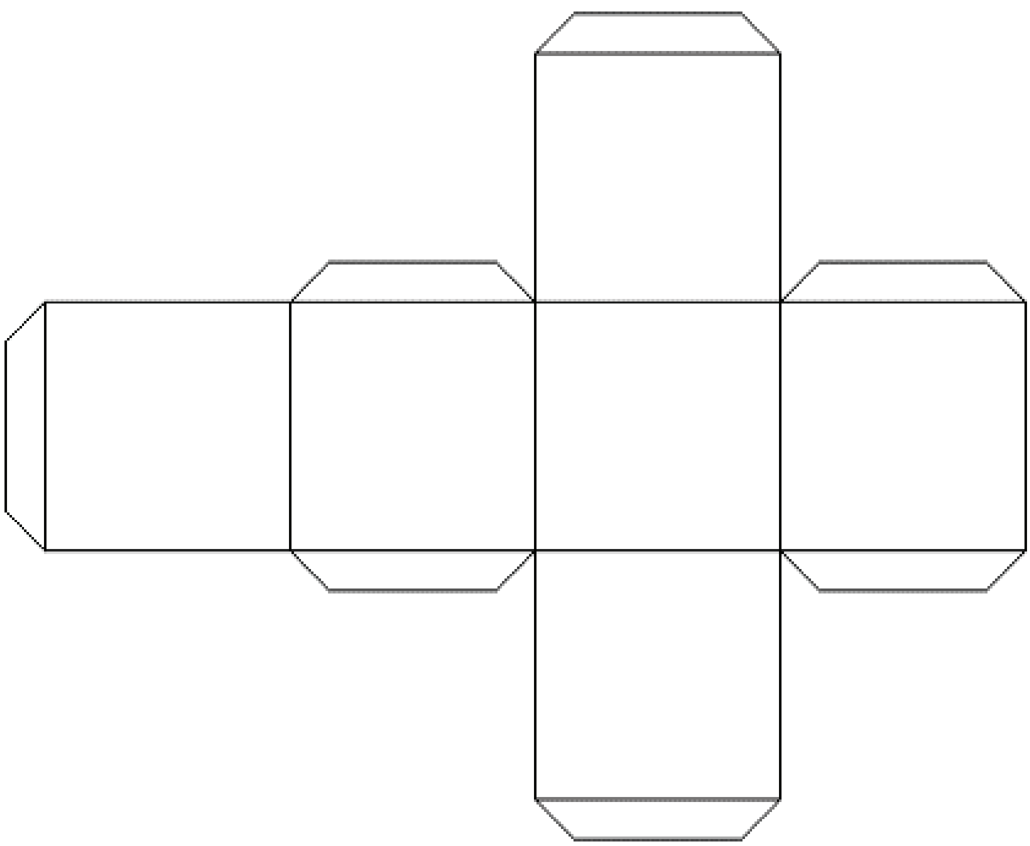
6 Spinner Template



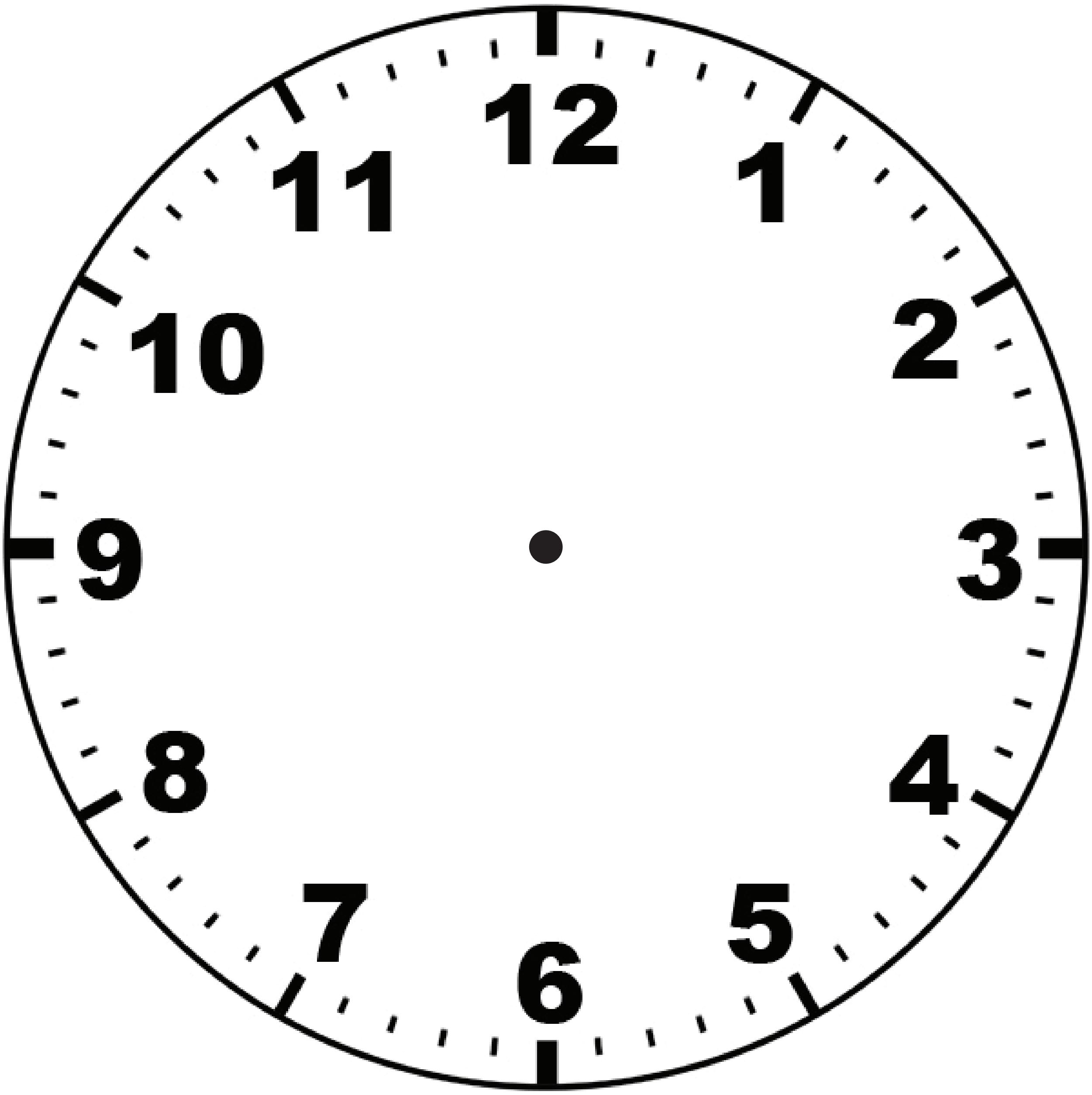


6-Sided Die or Number Cube Net





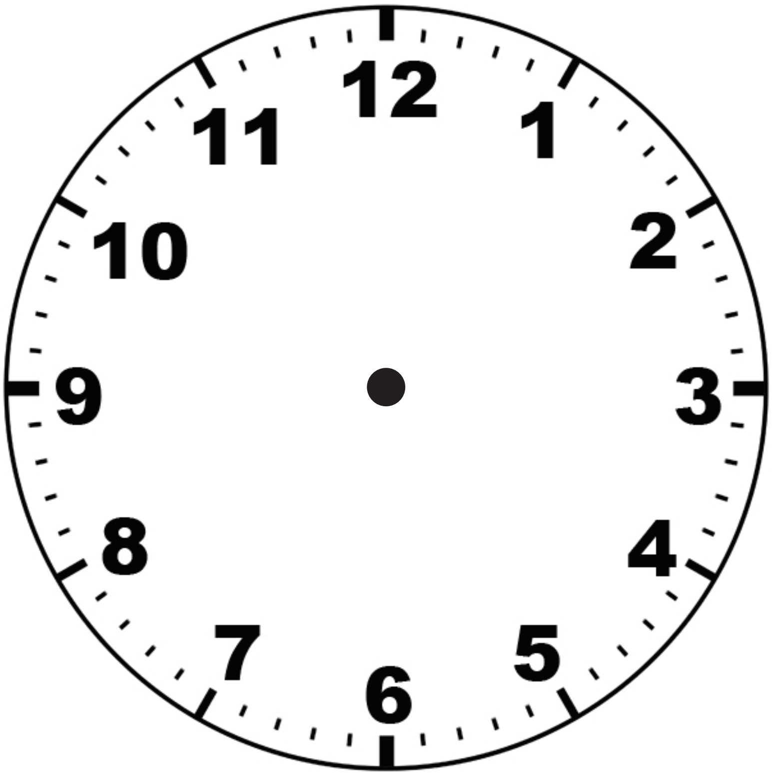
Analog Clock Face – Large

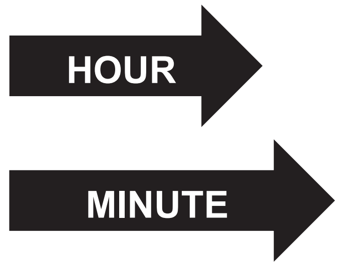


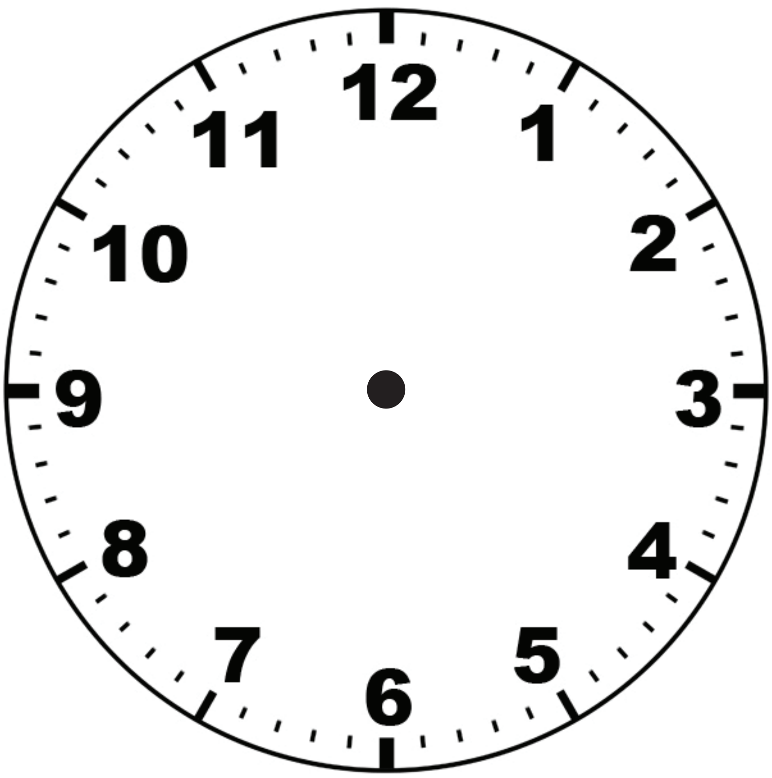
HOUR

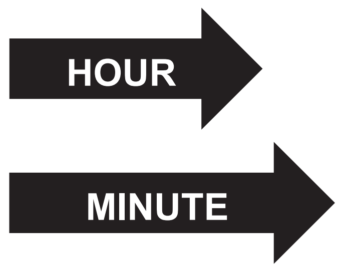
MINUTE

Analog Clock Face – Small









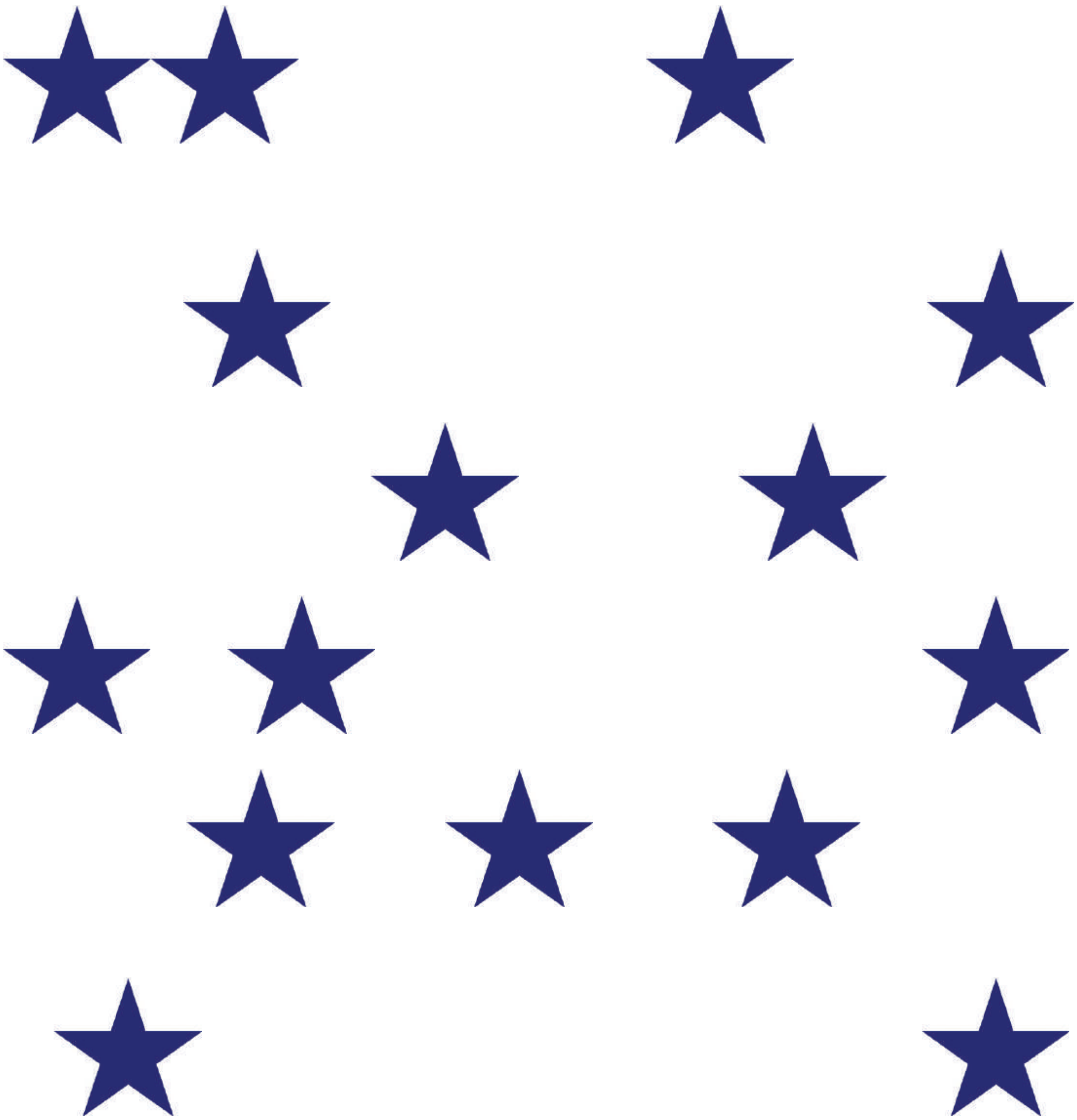
Arranging Chairs Game Cards

8	12	13	14	15
18	19	21	24	25
26	27	28	29	30
32	33	35	36	48
8	12	13	14	15
18	19	21	24	25
26	27	28	29	30
32	33	35	36	48

ARRAY BLOCKS GAME BOARD

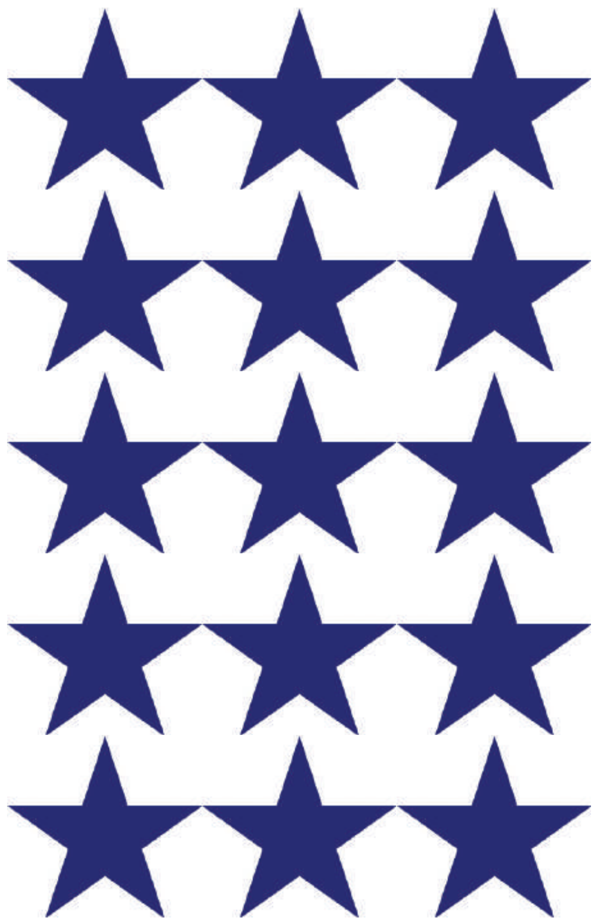
Array Cards

Star Array Card 1



How many stars are on this page?

Star Array Card 2

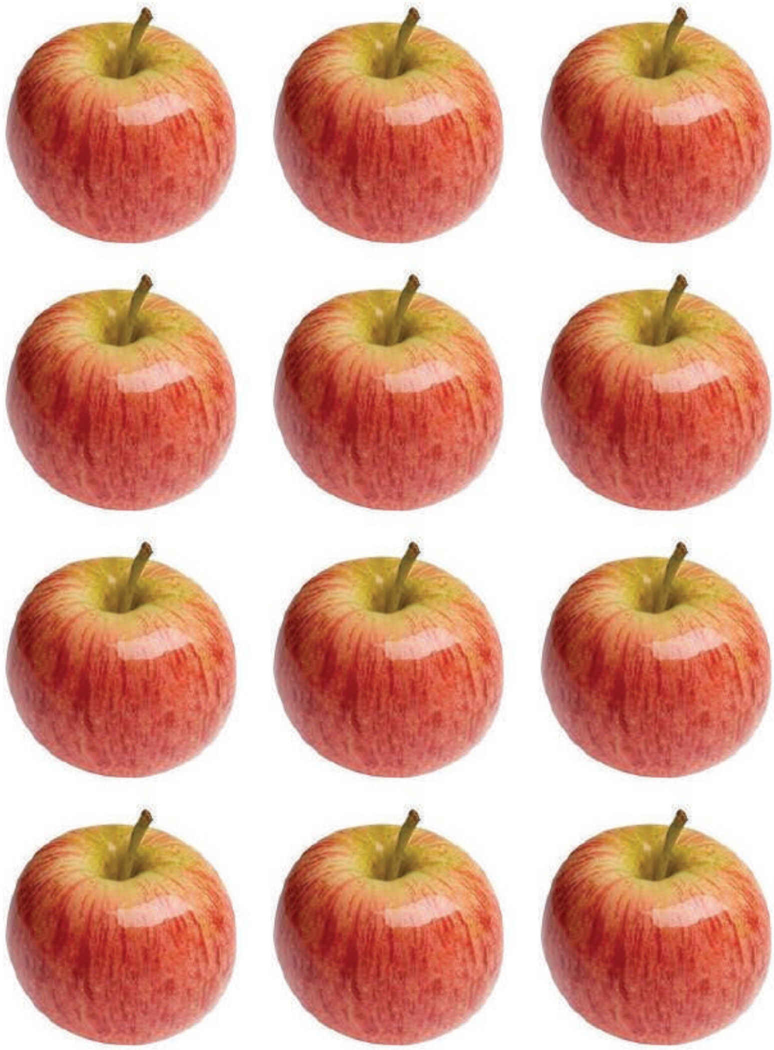


Number of Rows: ___________

Number in each row: ____________

How many stars are on this page? _____________

Apple Array Card

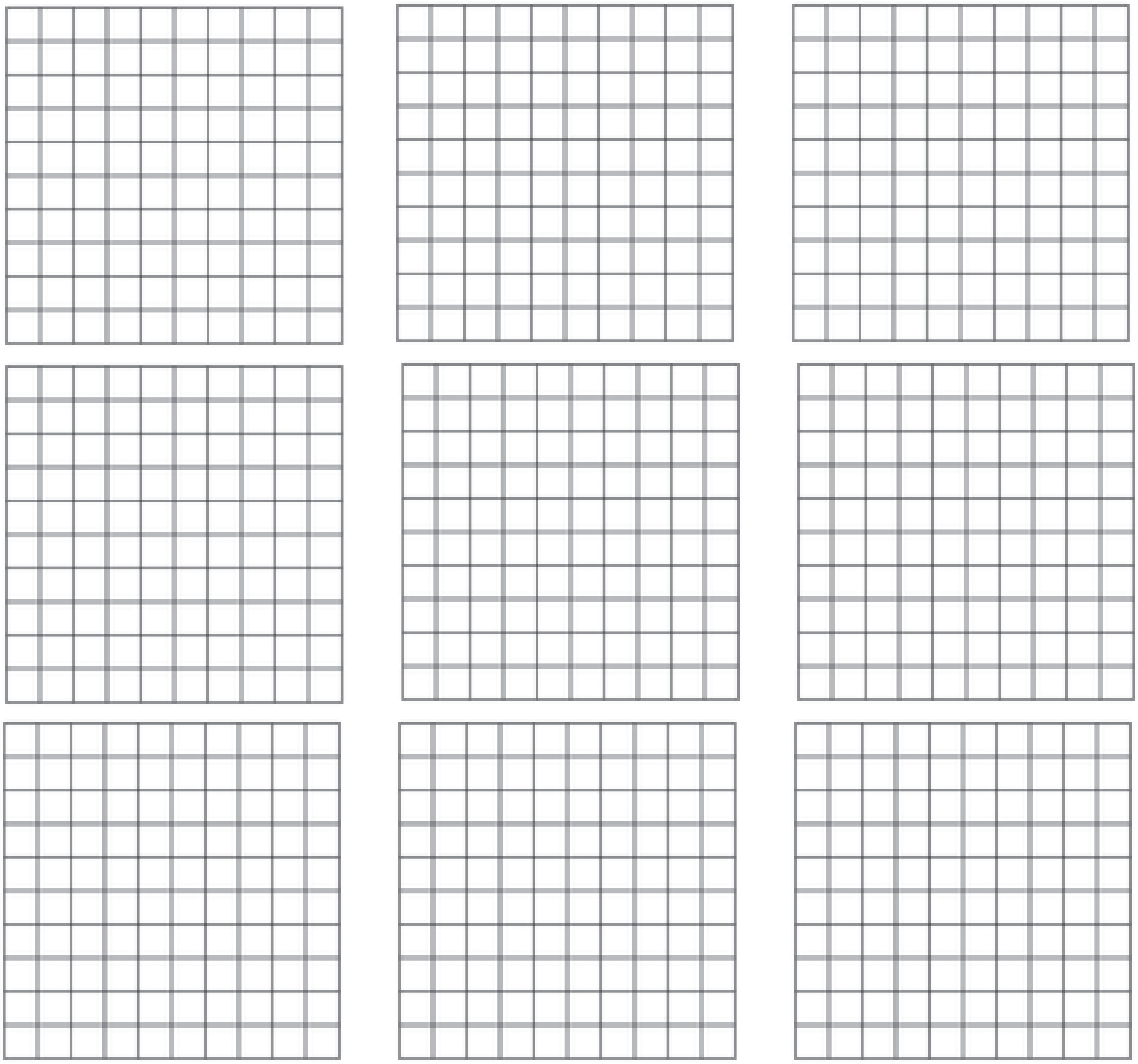


Can Array Card

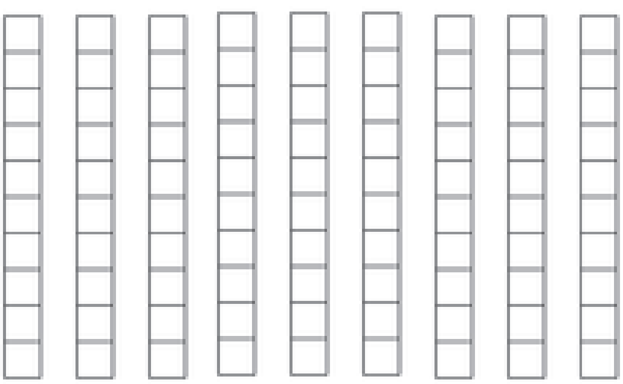


Array Grid

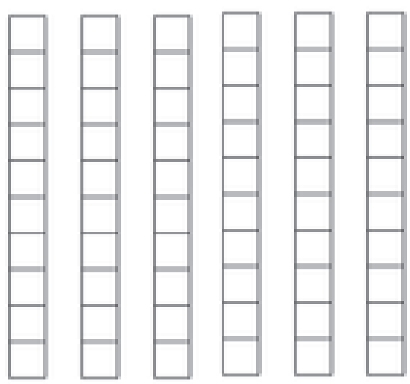
Base Ten Manipulatives – Student

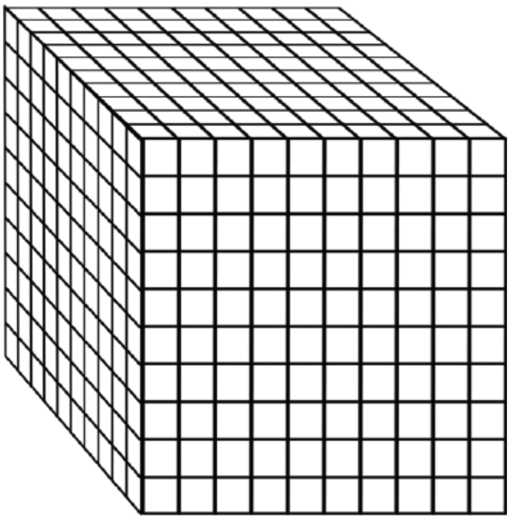
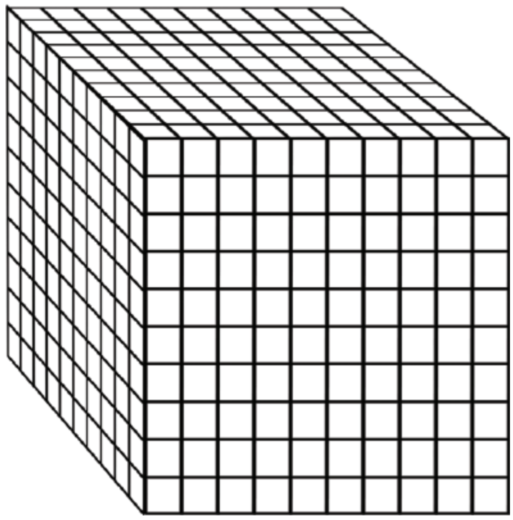
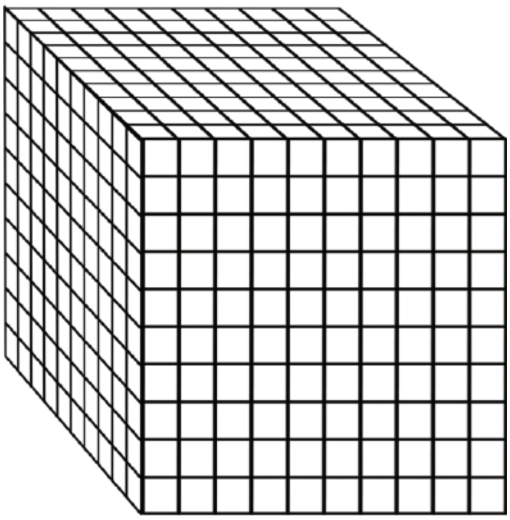
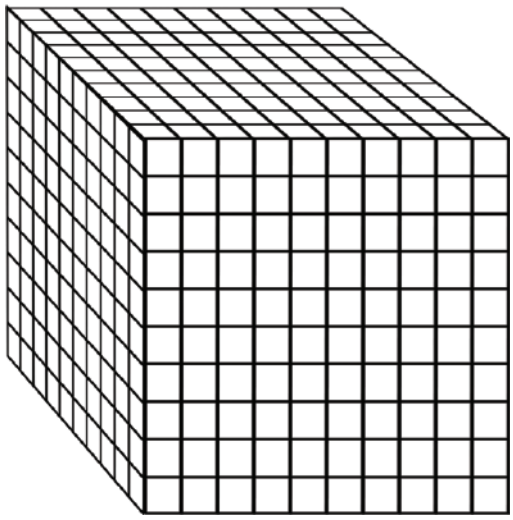
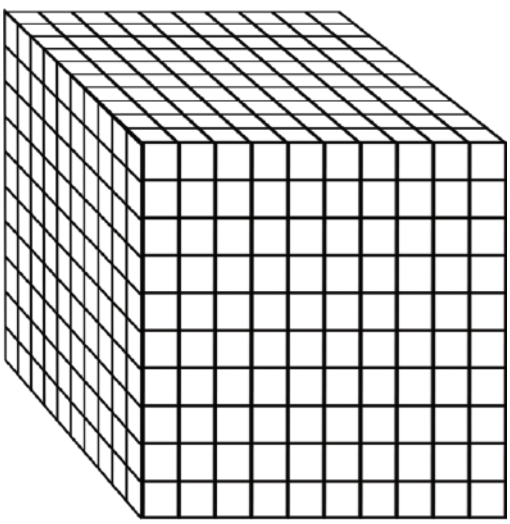
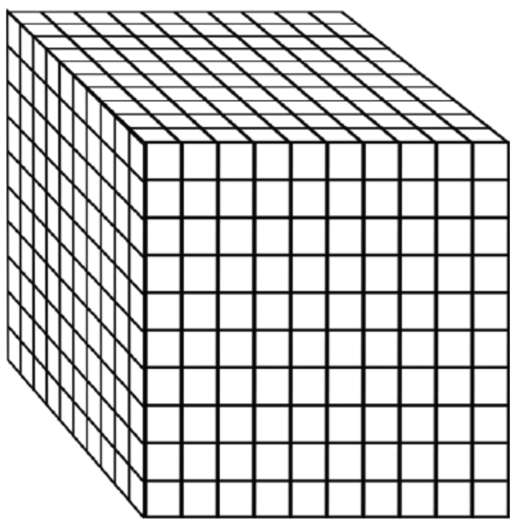


Tens



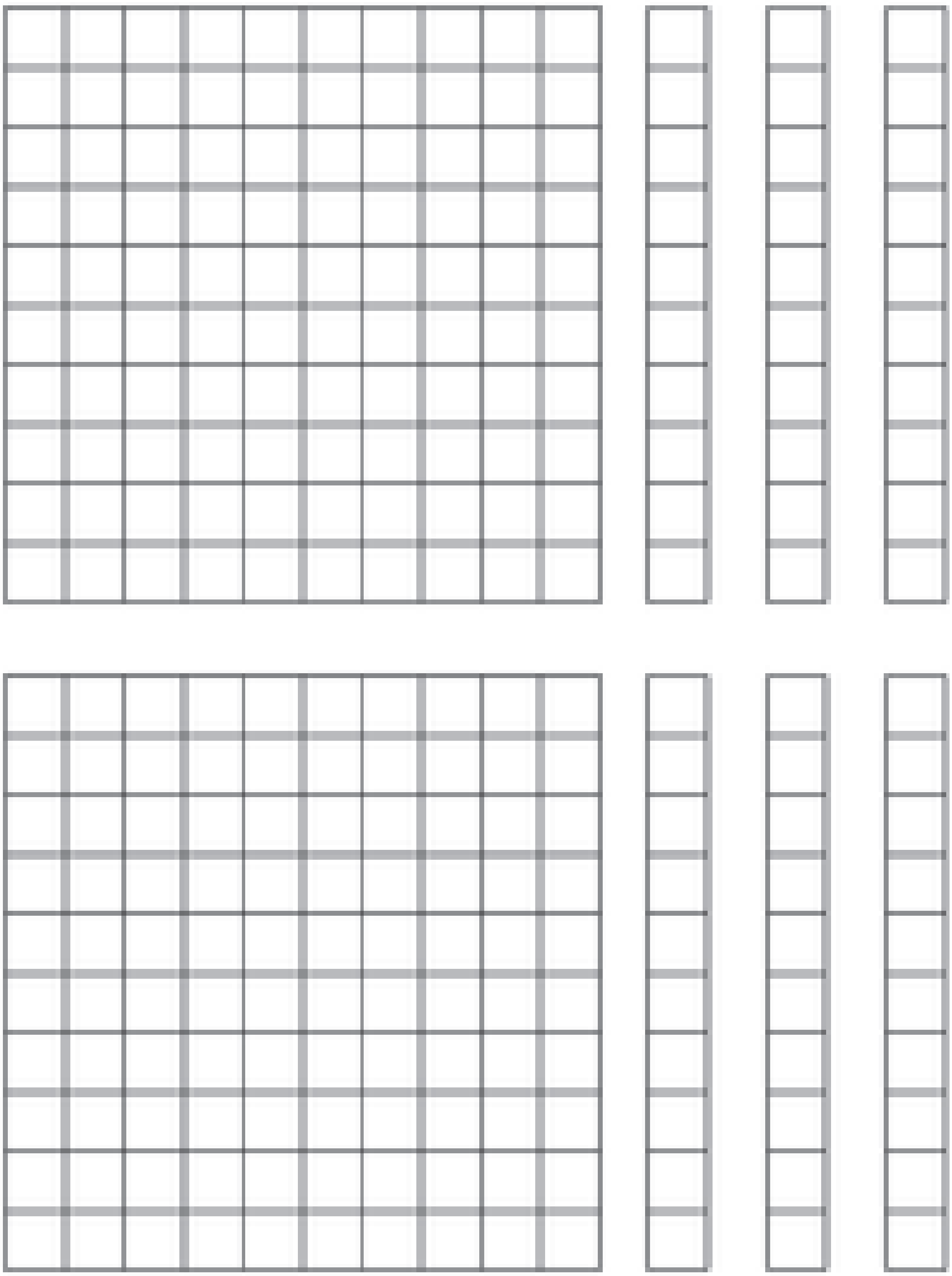
Ones (cut into squares)

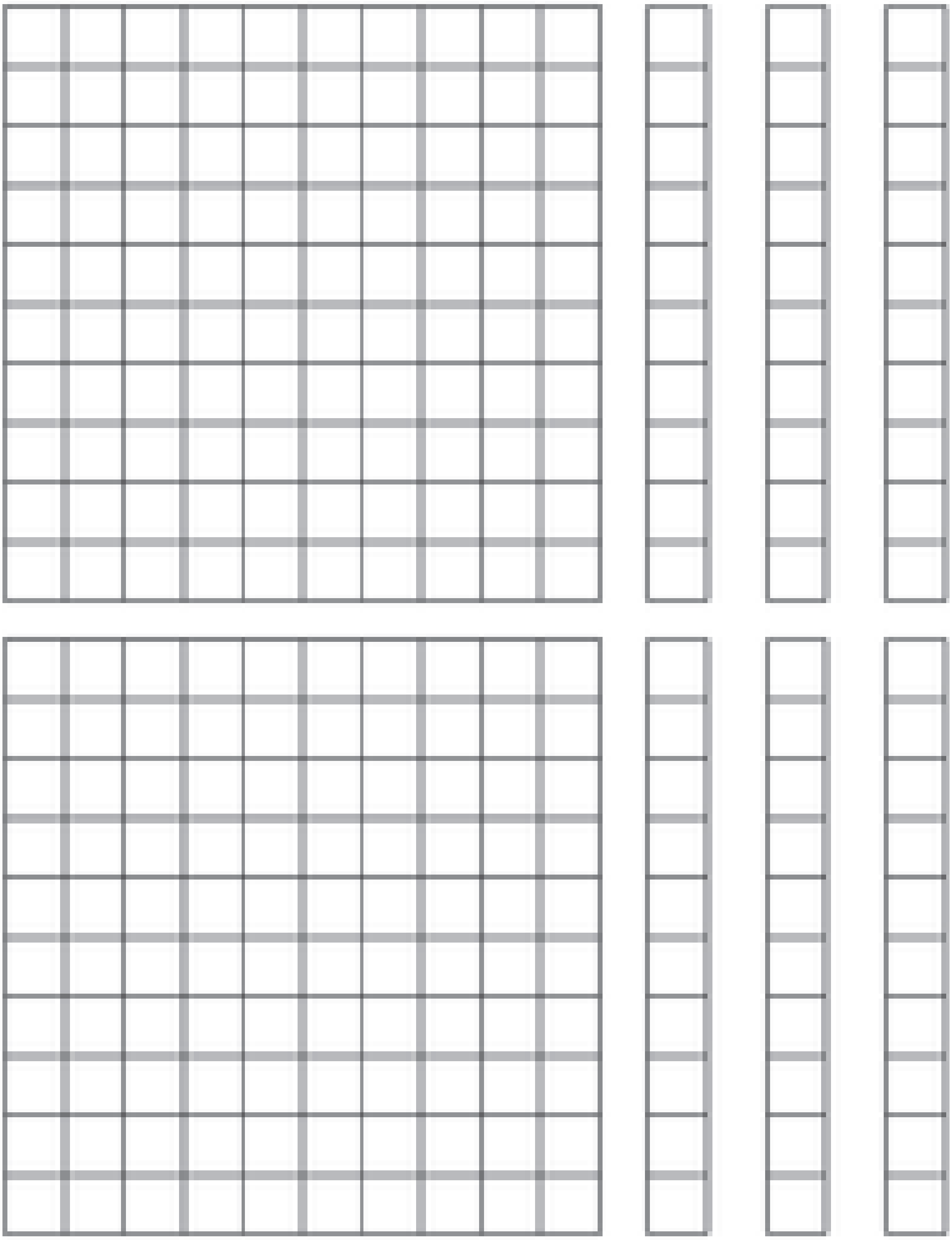


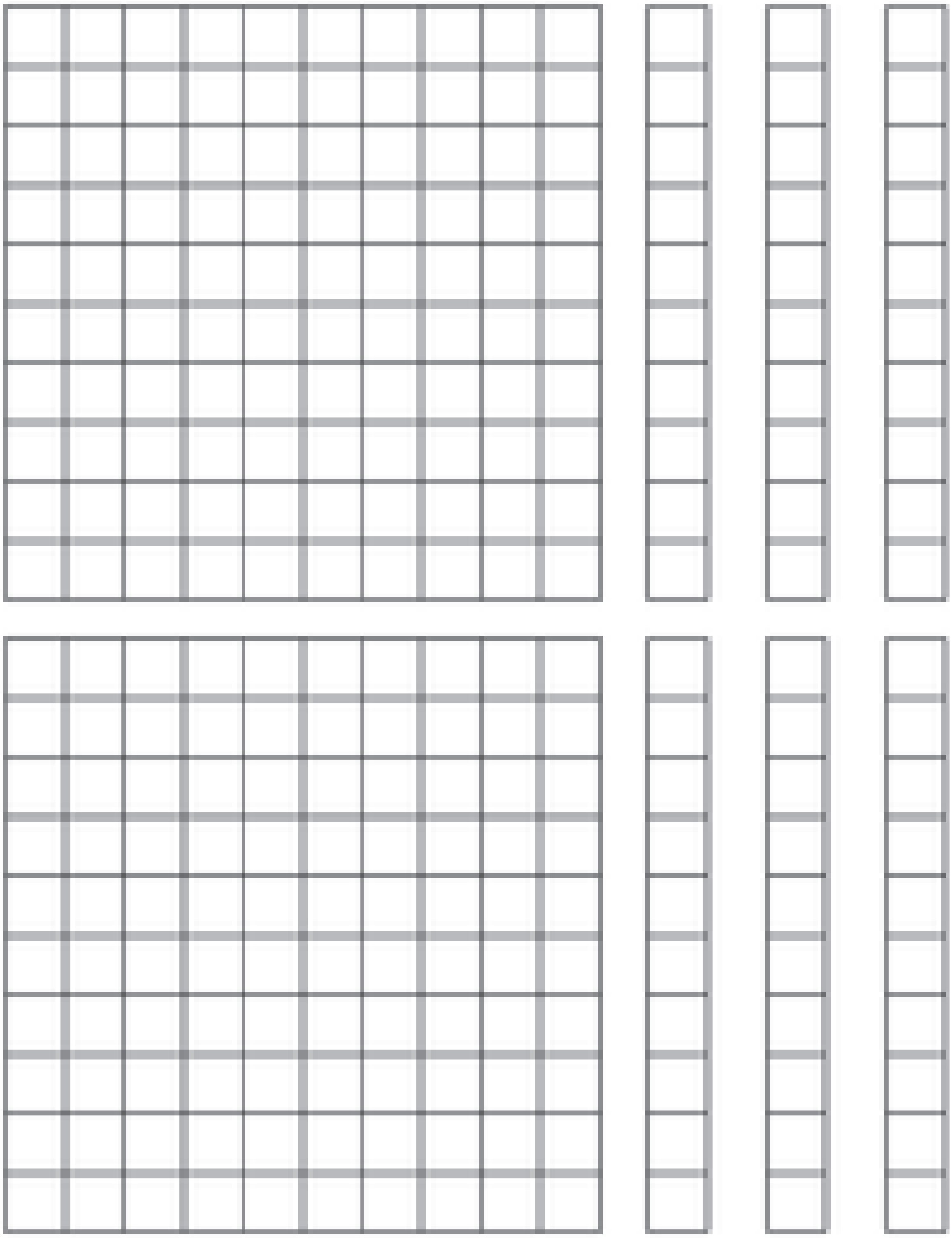







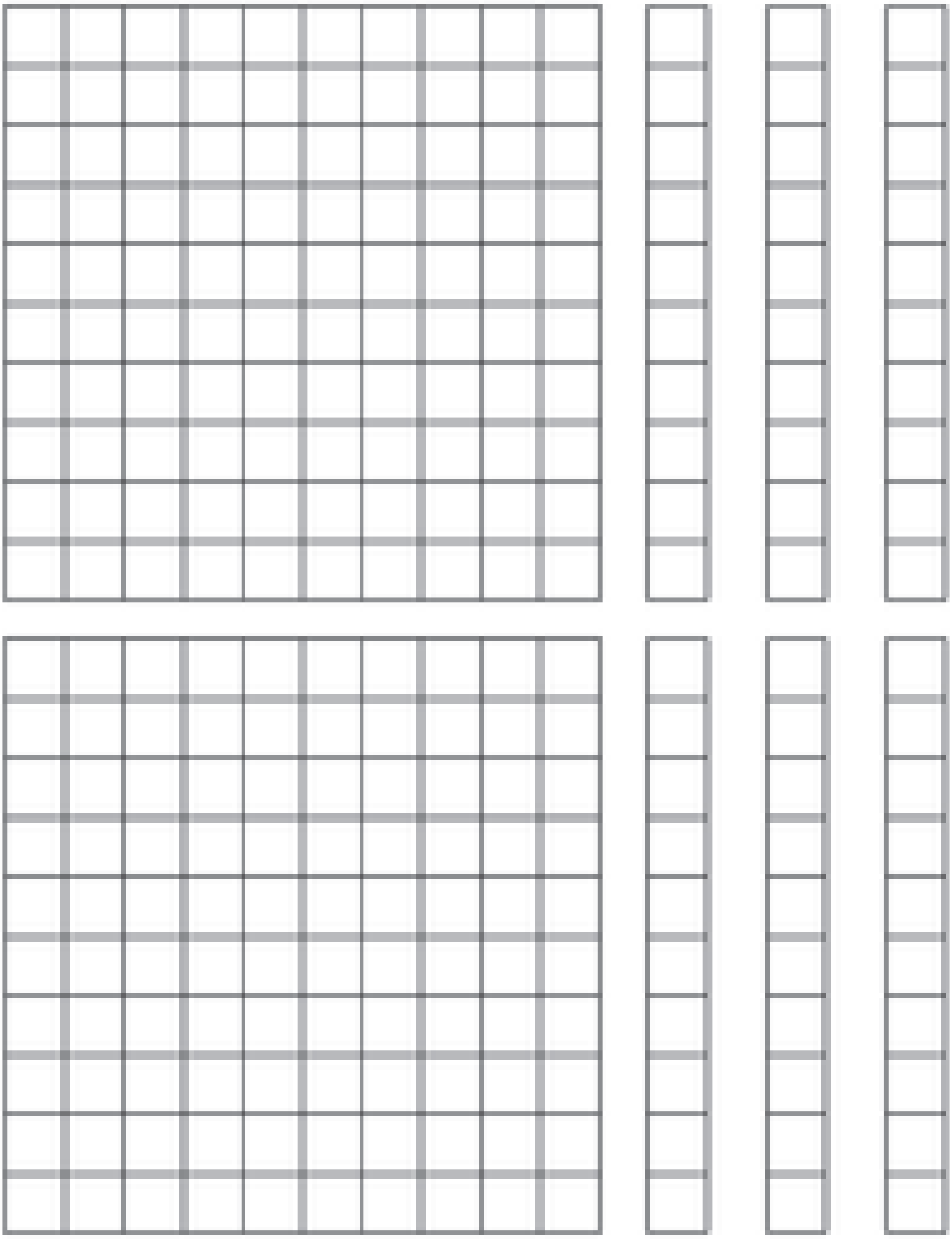
Base Ten Manipulatives – Teacher

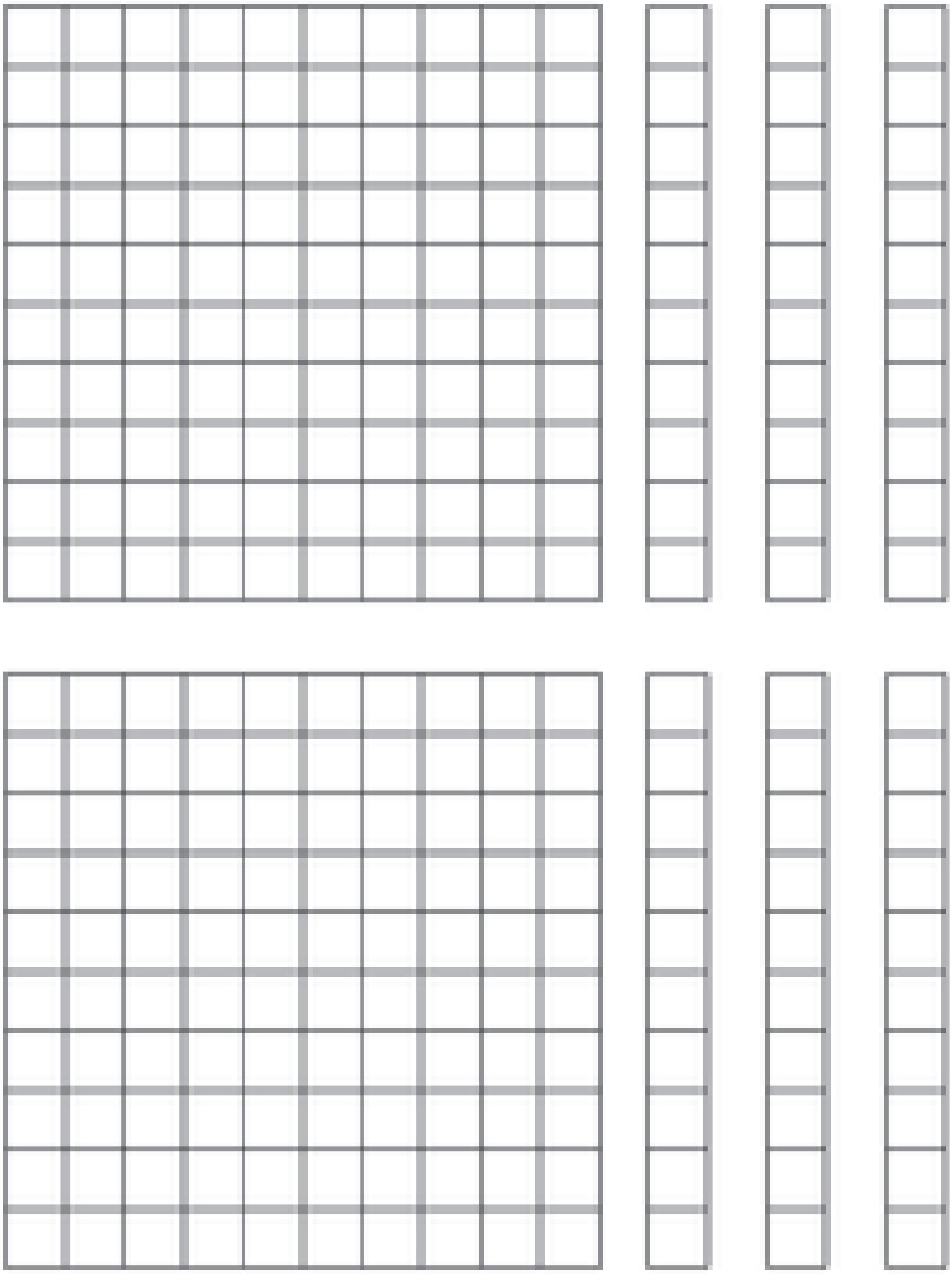
Large squares = 100
Strips = 10
Cut some strips into squares to create 1s

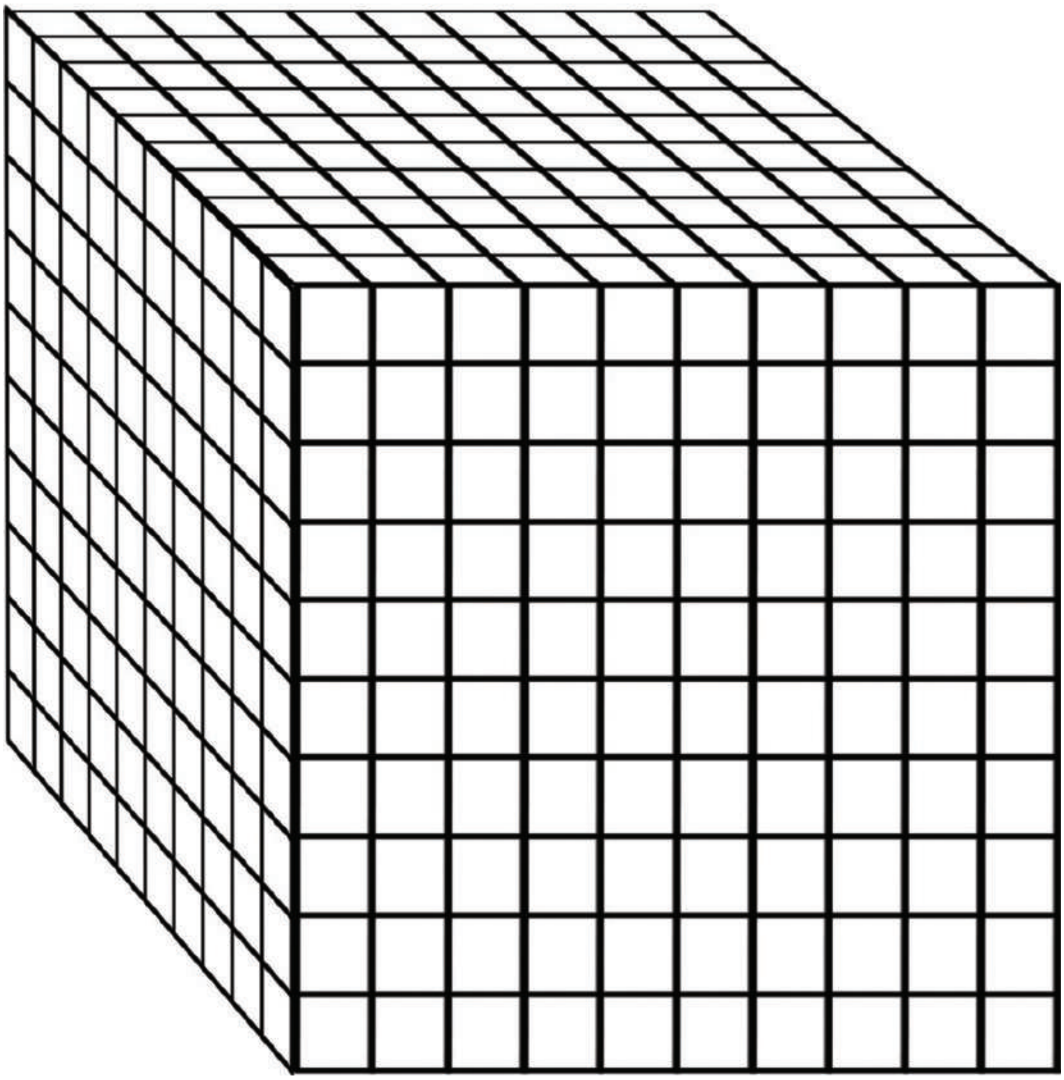


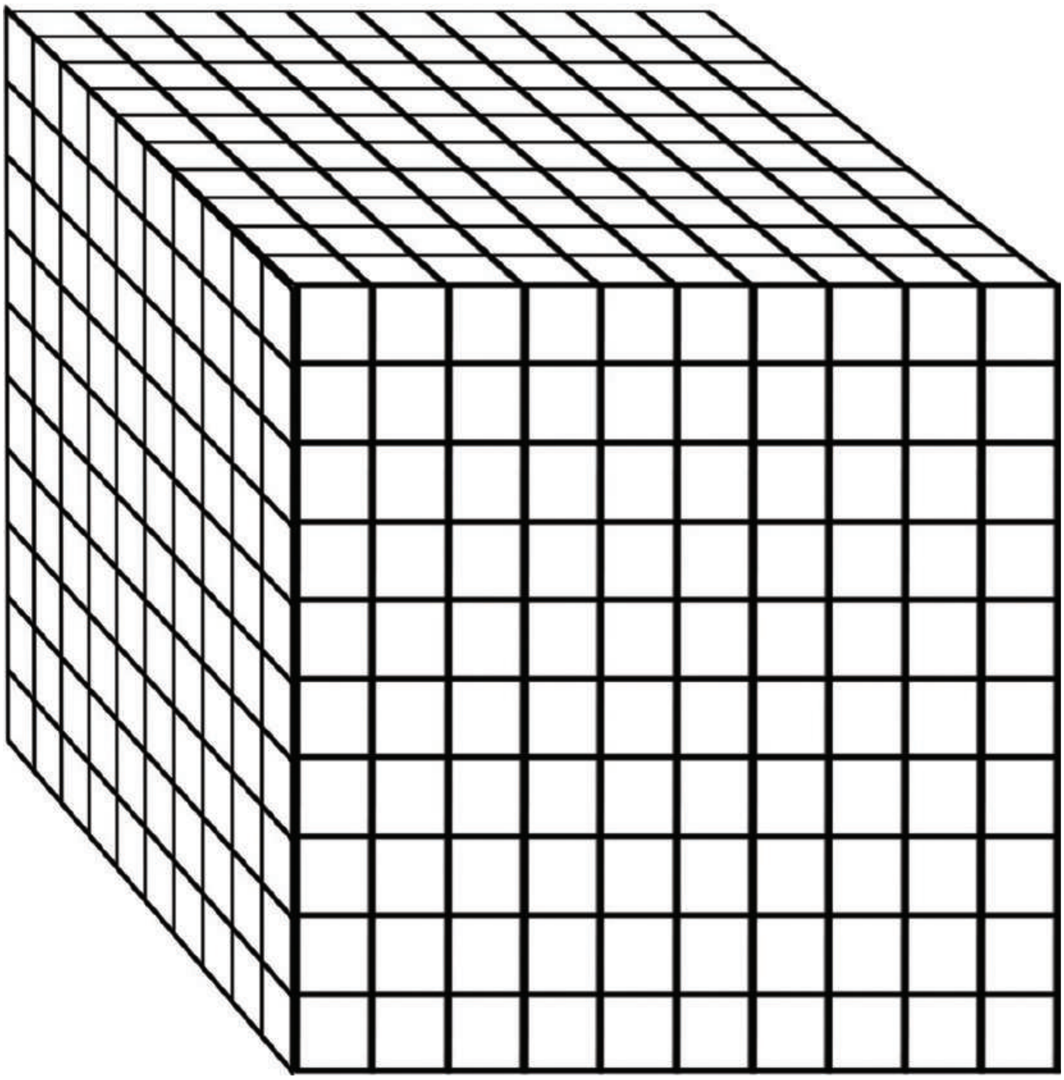


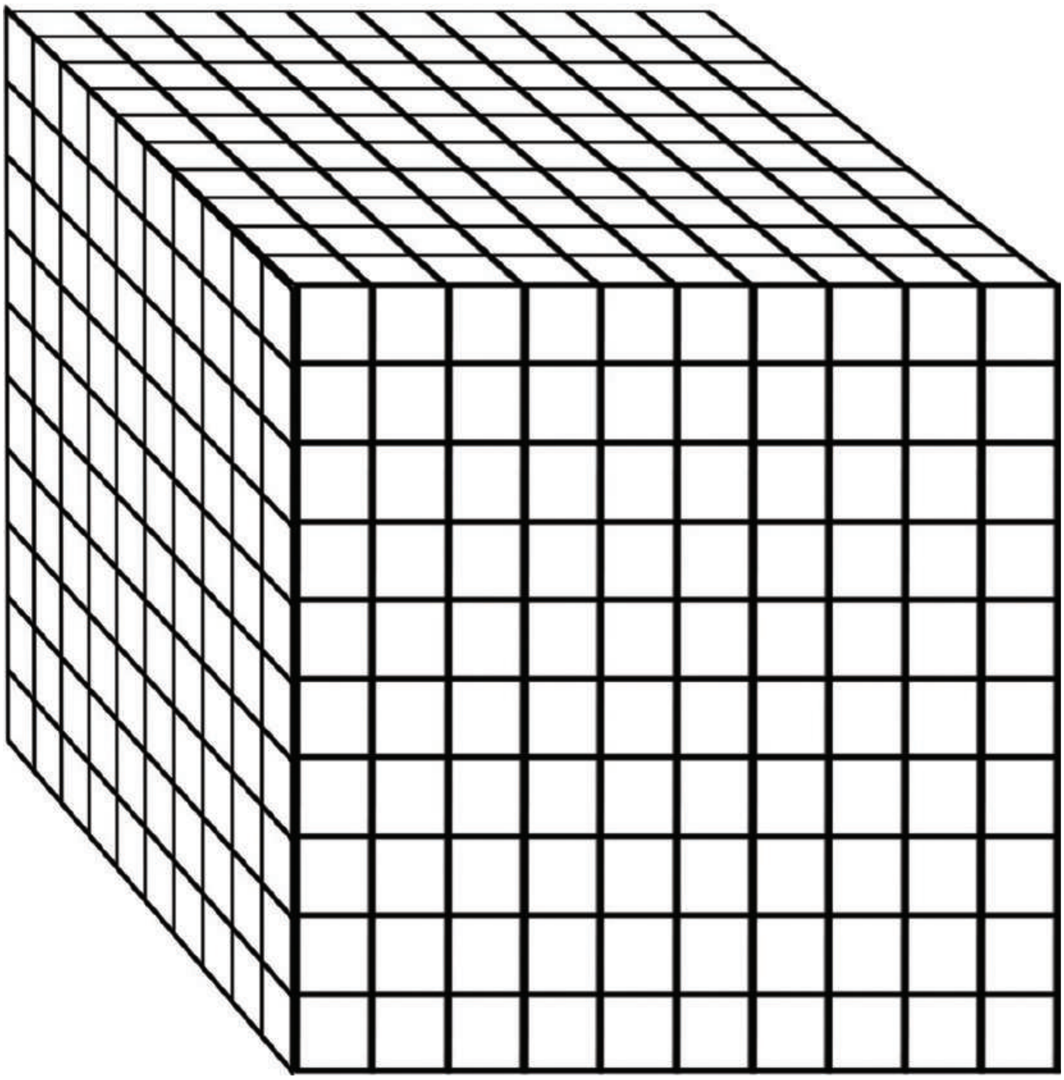












More or Less Than 1,000?

Dates on a tree

Note: There are approximately 23 medjool dates in a pound. At peak maturity, a date tree can produce 200 pounds of dates a year. In this photo, there could be up to 4,000 dates, so this could cause some interesting discussion!



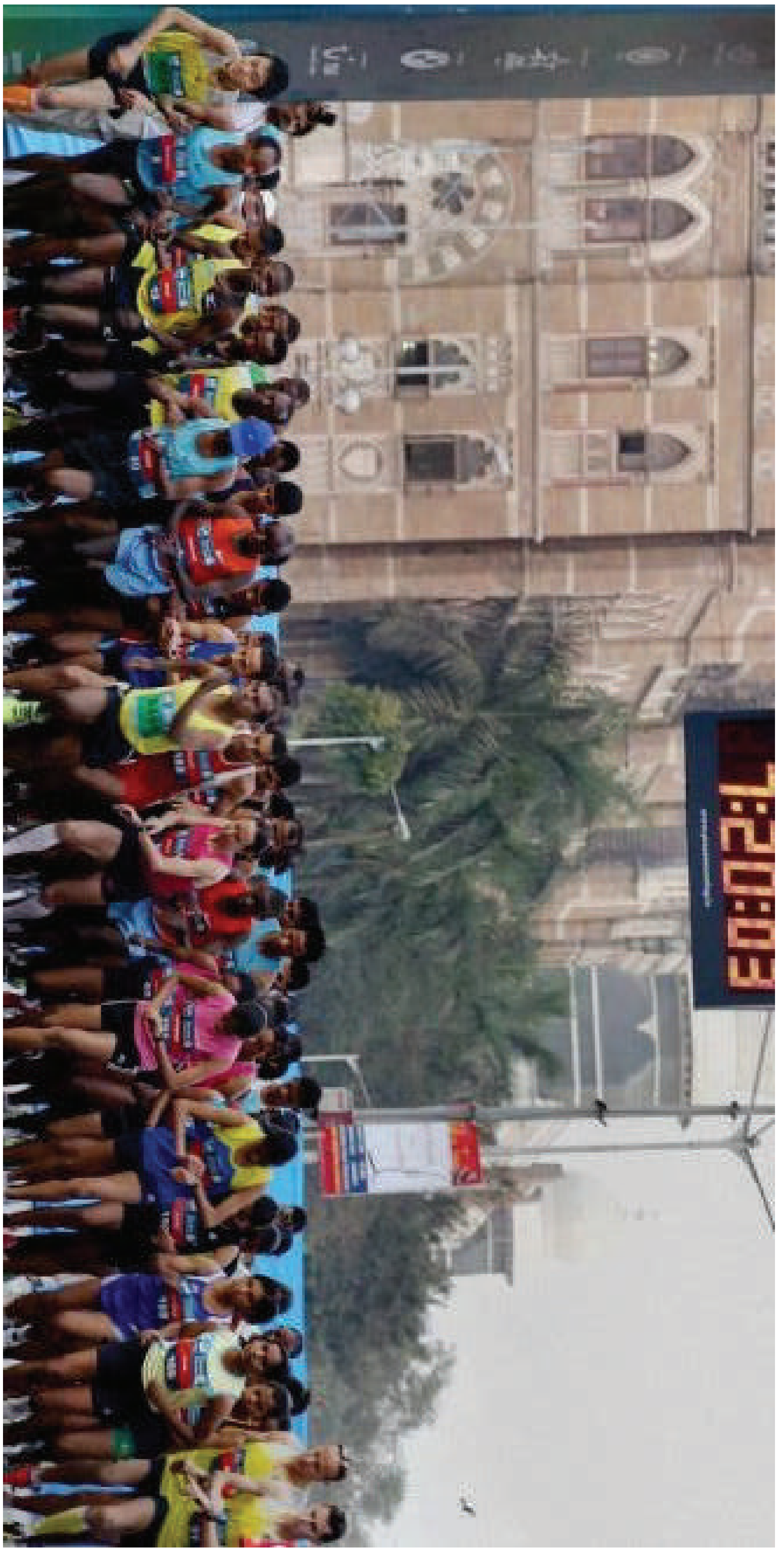
Grains of rice in a kg bag

Note: In a 1 kg bag of rice, there are approximately 50,000 grains of rice.



Runners in a race

Note: This one can also cause a lot of discussion! Some marathons have ten thousand runners while others have less than 100.



Multiplication Cards – 1

1 x 5 =	1 x 5 =
2 x 9 =	2 x 9 =
5 x 6 =	5 x 6 =
4 x 6 =	4 x 6 =
6 x 3 =	6 x 3 =
10 x 7 =	10 x 7 =
9 x 8 =	9 x 8 =
6 x 7 =	6 x 7 =

7 x 6 =	7 x 6 =
8 x 5 =	8 x 5 =
5 x 5 =	5 x 5 =
4 x 8 =	4 x 8 =
6 x 2 =	6 x 2 =
10 x 3 =	10 x 3 =
1 x 8 =	1 x 8 =
2 x 3 =	2 x 3 =

Number Cards 1-10

1	2	3
4	5	6
7	8	9
10		

Number Cards 0-12

0	1	2
3	4	5
6	7	8
9	10	11

12		

2-Centimeter Grid

(Four 40-square sets)

Perimeter and Area Squares

MULTIPLICATION PRACTICE: 4s

Directions: Use the 120 Chart to complete the following:

- Color the multiples of 4 ____________________ (color stated by teacher).
- Record them below. The first two have been done for you.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

4 x 1 = 4

4 x 2 = 8

4 x 3 = _____

4 x 4 = _____

4 x _____ = _____

4 x _____ = _____

4 x _____ = _____

4 x _____ = _____

4 x _____ = _____

4 x _____ = _____

4 x _____ = _____

4 x _____ = _____

MULTIPLICATION PRACTICE: 6s

Directions: Use the 120 Chart to complete the following:

- Color the multiples of 6 ____________________ (color stated by teacher).
- Record them below. The first two have been done for you.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

6 x 1 = 6

6 x 2 = 12

6 x 3 = _____

6 x 4 = _____

6 x _____ = _____

6 x _____ = _____

6 x _____ = _____

6 x _____ = _____

6 x _____ = _____

6 x _____ = _____

6 x _____ = _____

6 x _____ = _____

MULTIPLICATION PRACTICE: 7s

Directions: Use the 120 Chart to complete the following:

- Color the multiples of 7 ___________________ (color stated by teacher).
- Record them below. The first two have been done for you.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

7 x 1 = 7

7 x 2 = 14

7 x 3 = _____

7 x 4 = _____

7 x _____ = _____

7 x _____ = _____

7 x _____ = _____

7 x _____ = _____

7 x _____ = _____

7 x _____ = _____

7 x _____ = _____

7 x _____ = _____

MULTIPLICATION PRACTICE: 8s

Directions: Use the 120 Chart to complete the following:

- Color the multiples of 8 ____________________ (color stated by teacher).
- Record them below. The first two have been done for you.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

8 x 1 = 8

8 x 2 = 16

8 x 3 = _____

8 x 4 = _____

8 x _____ = _____

8 x _____ = _____

8 x _____ = _____

8 x _____ = _____

8 x _____ = _____

8 x _____ = _____

8 x _____ = _____

8 x _____ = _____

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